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9 May – 15 May 1985

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Vol 4 No 19

**Acorn's new BBC B+ Full review on page 12**

# Disney micro deals signed

SUPERMAN will be coming to your micro this autumn, courtesy of Beyond Software. And US Gold has signed deals giving it extensive rights for Walt Disney characters and the Muppets.

Bill Delaney, Beyond's managing director, confirmed "Beyond and First Star are in the final stages of negotiation to publish *Superman* in the UK in September."

*Superman* will be released under Beyond's new arcade label Monolith (see *Popular Computing Weekly*, May 2). Costing around £9.95, it will run on the Commodore 64 initially, although Beyond will have the rights to convert it for any format applicable to the UK market.

Bill Delaney was set to sign the contract with Dick Spitalny, First Star's president, in the States this week.

US Gold has signed three separate deals, with Walt Disney Productions for current and forthcoming Disney licences, and with Muppet Productions.

US Gold now has the UK rights to develop a computer game based on two new Disney films to be released this year, *Return to Oz*, the long

continued on page 5 ▶

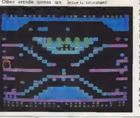
## Platform game for QL

QL CAVERNS is the title of the first machine-code arcade game for the QL. It is a 50 screen platform style game to be published by Sinclair. "It's a bit like *Manic Miner*," commented a Sinclair spokesman.

The idea is to explore the caverns collecting diamonds. The game features a number of animated sprites including a central character who walks, jumps and crawls.

Other arcade games are known to be in development for the QL, notably *Bandersnatch* – the game under development by Imagine at the time it folded and whose rights were bought by Sinclair seven months ago. The independent programming team responsible for *QL Caverns* is also thought to be working on another game.

The price will be £12.95 and according to Sinclair release is "imminent".



## Commodore records net loss

COMMODORE International has recorded a net loss for the third quarter which ended on March 31st this year.

The loss amounted to $20.8m (about £17m) with sales down from $326.2m to $168.3m (£267m to £138m). During the same quarter last year, Commodore made profits of $36.3m (then about £28m).

Commodore's chairman Irving Gould, stated that the company expected to announce a loss for the full year, which ends June 30th. He also

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**Commodore's new manager Nick Bessey talks on page 14**

**INSIDE** 〉 THE POPULAR BUGGY – AMSTRAD & ZX81 UPDATE


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# View

Commodore's third quarter loss of $20.6 million compared with profits of $38.3 million last year cannot be blamed on anyone other than Commodore themselves. In this country the company has been rightly criticised for an unrealistic dealer pricing policy in which only the large multiples could afford to sell the machines for a realistic market price

Last year's new home machines, the Plus 4 and the C16 were misplaced and mispriced, both in the UK and the US The Plus 4, selling sluggishly at £100 below the original selling price, simply detracts sales from the Commodore 64 The C16 is underpowered with 16K and is technically unexciting

But Commodore has its own salvation at hand Not with the C128 which is, at best, an upgrade for existing Commodore 64 users, but with the Amiga. The purchase of Amiga, the company, may well turn out to be one of its soundest investments ever

Not only is the machine reported to have 256K Rom and 128K Rom, 68000 processor and a built-in disc drive but, significantly, it has been designed with games in mind.

Early technical information about the machine indicates that aside from a vast range of colours and a very sophisticated sound chip, the Amiga has powerful hardware for line drawing and removal. This fact alone means the machine will be capable of spectacular 3D graphics

Commodore must do it right There must be no delays and everything must be done to bring the price of the machine down.

Now is the time for Commodore to learn from the pricing mistakes of the past and get the Amiga right

# Presents . . .



# Futures . . .

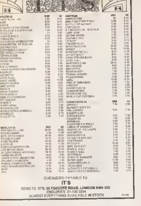
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ABC
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(Jan-June 1984 ABC)

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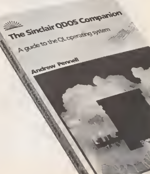
# QDOS – for smooth operators

If you have a Sinclair QL and you want to program effectively in machine code, then Andrew Pennell's latest book is for you.

The Sinclair QDOS Companion is a complete guide to the working of the QL operating system. It begins with an introduction and a chapter on multi-tasking, before going on to cover the 8049 second processor, input/output, device drivers, exceptions, interrupts and the Job Scheduler, and QDOS utilities. The final chapters show you how both to extend SuperBASIC and make use of external ROMS.

The book is definitely not just a rehash of the QDOS manual, but extends the basic information to give you a broader understanding of how best to make use of QDOS. The QDOS traps are described not in numerical order but in a more logical order based on their use.

Andrew Pennell is an experienced Sinclair author. Practical Computing described his previous book Assembly Language Programming on the Sinclair QL as: 'An excellent introduction ... eminently readable'.




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# Disney deals for US Gold

◄ continued from page 1

awaited follow-up to *Wizard of Oz* and due out this August, and *Black Cauldron*, set for release in October. US Gold hopes its *Return to Oz* game will be ready for sale this autumn but no firm plans have yet been made for *Black Cauldron*.

"We would hope to be able to bring out *Return to Oz* on Spectrum, Commodore and Amstrad machines," confirmed Tim Chaney of US Gold.

The company has also gained the rights to a computer game based on The *Jungle Book* but again no firm plans have yet been made.

The contract with Walt Disney Productions also allows US Gold to develop computer games based on existing characters from the Disney stable, and it will be bringing the current Disney games, by US company Sierra Online to this country. These are all educational titles aimed at young children.

The first three Sierra titles to be released here will be *Winnie the Pooh in Hundred Acre Wood*, *Donald Duck's Playground* and *Mickey's Space Adventure*. All will be available on the Commodore 64 on disc only, at £12.95, before the end of the year.

"We are looking into the technical possibilities of putting these titles on cassette," said Tim Chaney. "I would hope we could do it with *Donald Duck* and *Winnie the Pooh*, but there's no way *Mickey's Space Adventure* will go on a cassette." This title is packaged on two double-sided discs.

The two forthcoming release from Muppet Productions have been licensed from Simon and Shuster in the US. *Kermit's Electronic Storymaker* and *The Great Gonzo*. Again they will be available on disc for Commodore 64 at £12.95.

The Sierra and Muppet titles will be published under a new US Gold label, KIDS!

Tim Chaney continued, "The educational market is not particularly big over here, so we'll obviously have to make it so, with the new label."

KIDS! will be US Gold's second sub-division – it launched All-American Adventures at the beginning of the year.

## Herbert continues Wally saga

MIKRO-GEN's latest episode on the Wally saga is *Herbert's Dummy Run*. Herbert is the baby who featured in *Everyone's a Wally*.

The game is set in a department store, where Herbert has got lost and must find his way to the Lost and Found office to be reunited with his parents.

Costing £9.95, *Herbert's Dummy Run* will be launched simultaneously for the Spectrum and Commodore 64 in two weeks' time. An Amstrad version is due to follow shortly.

## Tiger crash cuts supply

THERE will be a shortage of software over the next week at branches of John Menzies, due to the crash of Tiger Distribution.

Tiger, which went into liquidation last week, exclusively handled John Menzies' distribution to all 120 branches throughout the US.

"There will be shortages of stocks in stores, which will take about a week to ten days to sort out," said Alan Marshall, ex-product manager for software at John Menzies. "We have made contingency plans to for the most popular titles, so that there will be plenty of 'top 20' software available."

## Apple drops Lisa/ Mac XL

APPLE Computer is to discontinue manufacture of the Macintosh XL (the former Lisa), and will introduce a 20Mb hard disc drive for the 512K Mac in the Autumn.

The Lisa was launched in January 1983, and was Apple's first machine to use the Macintosh operating environment. Apple changed the name to Macintosh XL at the beginning of this year, due, it claimed, to confusion about its Macintosh compatibility.

## Loss for CBM

◄ continued from page 1

said that the fiscal year 1985 was clearly a transitional one for Commodore, and one of investment in its future.

Commodore International Chairman Irving Gould

The slow-down in sales – on both sides of the Atlantic – price cuts, strength of the dollar and investment in new machines, including the continuing high costs in the development of the Amiga machine, all contributed towards the loss.

Paul Lazovick, director of investor relations at Commodore US, said, "While it looks as though we will make a loss for the year, you must remember we are bringing out four new products this year, the 16-bit Unix compatible 900, the 128s, the first machine from the Amiga group and spending on R and D is up. We cut the price of the Commodore 64 in the States by 25% in February."

That price cut in the US was matched by the 30% cut in the Plus/4 in this country.

# Enterprise to launch in May

ENTERPRISE is apparently planning to bring forward the release date of its 128K machine. The £249.95 64K model has been in the shops since the beginning of the year, following delays of over a year.

This time, however, Enterprise is keen to be one of the first. "The 128K Enterprise should now be out in a couple of weeks' time, rather than the original date of June," said a spokesman for the company. "Machines with 128K Ram are making the headlines at the moment and we intend to beat most of the other companies."

The spokesman added that a price reduction in the 64K model seems certain. "I'm sure the 64K will be repositioned in the market when the 128K is launched – I expect it'll drop to under £200."

## Acornsoft cuts Electron prices

ACORNSOFT has cut the price of all Electron software, bar three titles. The 55 reduced titles now cost £6.99.

The three which remain at their original prices are *Elite* (£17.95 on disc, £12.95 cassette), *Countdown to Doom* (£14.95 on Rom cartridge) and the Linkword language teaching series (£14.95 each). The change is intended to bring prices in line with those for the machine itself, according to Acornsoft.

## Atari gains Prestel access

ATARI owners can now access Prestel using a new modem interface and software package from Miracle Technology. Multi-Viewterm/Datatari retails for £59.95.

All Prestel facilities are now available to users of all current Atari machines, including the 130XE. In addition, the package would also be compatible with the 65XE and 65XEM – if they are released.

# Letters

## Bad news

On this week's cover (April 18) was some extremely bad news.

It wasn't, as you might expect, on the front cover, but on the back cover – the home of our very own, the world famous Automata advert.

What can you deduce from the last broadcast? Christian Penfold bored with *Popular Computing Weekly*? No, I think that Automata is in financial difficulties! As the Piman is one of the best parts of *Popular*, I think it would be a great shame for him to end up in the graveyard depicted not too long ago in the self same ad.

Automata is one of the few software houses left in the business which is what computing is all about, ie, good, clean, non-violent fun.

*Simon James Gray*
*(A Faithful Pimaniac)*
*91 Portland Street*
*Southport*

## Corrected listing

Some people may have noticed that Mark Snell's Clock routine in the March 28 issue will not work with some Spectrum peripherals.

This can be corrected if the following lines are added to the listing:

```
73 CLEAR 64763: FOR N=64766 to 65025 POKE N,252 NEXT N
76 POKE 64764, 195 POKE 64765, 105 POKE 64766,254
```

Then remove the *Clear* statement from Line 80 and change the second number in Line 130 from 9 to 253.

*S Overell*
*33 Chesterton Drive*
*Merstham*
*Surrey*

## Poor loading

In response to A Wood's letter about turbo loaders I have a few things to add.

The Commodore 64 suffers less than the Spectrum from poor loading resulting from the use of turbo loaders because its dedicated cassette player is sufficiently reliable.

The situation with using an ordinary tape recorder with the Spectrum is not so easy. When I got *Knight Lore* I had difficulty loading it, and now it won't load at all – which is a great pity since it was my favourite game.

Please take the hint, software companies – turbo-loaders are not what they are cracked up to be.

*Dave Baily*
*106 Wake Green Road*
*Moseley*
*Birmingham*

## Thenks, mate!

As the author of Automata's Spectrum game *Hew Wheels, John?*, I would like to say thanks for the free publicity (Page 34, March 28). Anyone who helps me to have a little earn is a friend for life.

What a lovely little whizzer your buggy looks, although the only one I've seen could have been better shod, it's donk was a bit cammy and it had a hum in the bum. (Never get through an MOT like that, mate!)

Keep all your deals in bed but don't get yourselves tucked-up!

*Tony Reynolds*
*Colchester*
*Essex*

## Screen driver

After many hours searching through the innards of QL Archive, I found the *Print* statements do not use the standard QDOS screen drivers.

Instead, all output is processed by a Psion screen driver, which seems to have all the goodies that the Sinclair drivers are missing. By printing codes, less than 32, the cursor can be moved about easily. Both underlining and reverse video are also now available.

The codes are printed by *Print Chr (x)* as follows:

| Code [CHR(x)] | Function |
|---|---|
| 5 | toggle Underline On/Off |
| 6 | Cursor Forward 1 Character |
| 8 | Cursor Back 1 Character |
| 10 | Cursor Down 1 Line |
| 11 | Cursor Up 1 Line |
| 12 | Clear Screen |
| 13 | Carriage Return (Cursor to Start or Line) |
| 14 | Enable Cursor |
| 15 | Disable Cursor |
| 16 | Toggle Reverse Video On/Off |
| 18 | Cursor to start of next line |
| 30 | Cursor to start of previous line |

If anyone wants a full list of Psion control codes I'll return one with all SAEs sent.

*Mark Webb*
*Highways*
*Butlers Dene Road*
*Woldingham*
*Surrey*

## Fixed bugs

I have just received a copy of the latest QL ROM, version MG, and thought readers may be interested in it. It is very similar indeed to JS (described in vol 4 no 16), only with some more bugs fixed. It contains QDOS version 1 13, which so far as I can see is the same as 1 10. Incidentally VER$ now returns a 3 character string, with the last character being used to denote the 'nationality' of the QL, which is a space for the British version.

Unfortunately, these ROMs appeared too late for inclusion in my book *The QDOS Companion* but an update note is available free of charge to all those interested, simply ask for it when you order the book from Sunshine. If you already have the book and require the update, send the ISBN number cut from the back cover (as proof of purchase) with your address, etc, and an SAE to Sunshine Books, 12-13 Little Newport St, London WC2H 7PP.

*Andy Pennell*
*Woodford Green*
*Essex*

*"Jenkins in accounts has reached the fifth screen in QL Caverns without using the trampolines."*

## Not implemented

I read with interest Jeff Naylor's review of the new Amstrad CPC 664 (vol 4 no 17) and felt I must point out a slight inaccuracy regarding the function *Dec$* on the 464 as being 'left out'. It certainly was not left out, it just doesn't work due to a bug in the Rom, although naturally Amstrad statements refer to it as 'not implemented'.

Interested 464 owners can, with the aid of a dissembler, see this quite easily. Addresses E354 to E387 in the upper Rom contain a look-up table which is used to locate Basic reserved words. For example, addresses E354 and E355 contain the start address of reserved words beginning with 'A', E356 and E357 contain the start address of reserved words beginning with 'B' and so on in alphabetical order.

Reserved words beginning with 'D' start at E5B9 and on inspection it will be found that these are *Drawr, Drawr, Dim, Dim Delete, Deg Defstr, Defreal, Defint, Def, Dec* and *Data*.

Another table starting at D190 holds addresses for a number of functions. The address for *Dec$* is F8EA which is the address the interpreter will jump to, to evaluate the function. The bug exists at the address F8ED which instead of being 29Hex is 28Hex, thus corrupting the routine and causing 'Syntax Error' to be printed.

Another bug which I am sure Amstrad will find an excuse for is in string handling. For instance, one would expect the following routine to give an answer of 12345678:

```
10 A = 1234 B = 5678
20 A$=STR$(A)+STR$(B)
30 PRINT A$
```

What one gets, however, is, is (space) 1234 (space) 5678.

Whilst I am not decrying an excellent achievement on behalf of Amstrad and Locomotive Software, I dislike the fact that Amstrad seem to take delight in referring to the bugs in Sir Clive's QL (Amstrad CPC 464 User, May 1985) while not owning up to their own.

*B A Pedder*
*Houghton Regis*
*Dunstable*
*Beds*

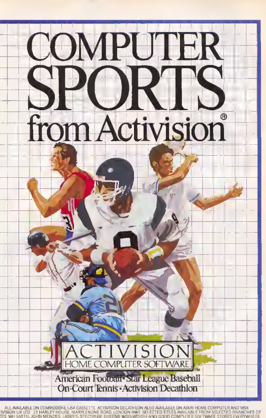


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# Buggy update

*As the Popular Buggy trundles along from strength to strength – an update from **John Billingsley***

Many readers will by now have the satisfaction of training their trolleys to gyrate around the room. A few, however, might instead be muttering curses

Mike Carey spotted the first problem, a sadly mangled program for the Amstrad, of course the wrong one got printed! Our apologies By now, I hope you will have deduced that Lines 330 and 340 should read

330 Print#8, Chr$(0),
340 For J = 1 to 100 Next J

To give the motors time to stop between segments. Now the value must be dug out of the array in 350 to give

350 Print#8, Chr$(B(M)),

Even then the gremlins had not finished, since Line 370 should be

370 Print#8, Chr$(0),

This stops the motors at the end of the run.

Of course, as Mike points out, the Amstrad can use an upper-crust Basic, and it is reasonable to base the program on the BBC version. It then appears as the program below

```
 10 DIM B(100)
 20 DIM T(100)
 30 N=0:TO=TIME
 40 J=0:K=0
100 A$=INKEY$
130 IF A$="" THEN 100
140 IF A$=" " THEN K=0
150 IF A$="L" THEN K=2
160 IF A$="R" THEN K=1
170 IF A$="F" THEN K=3
180 IF A$="G" THEN 300
190 N=N+1
200 B(N)=K
210 T(N)=TIME-TO
220 PRINT#8,CHR$(0);
230 FOR J=1 TO 100:NEXT
240 PRINT#8,CHR$(K);
260 GOTO 100
300 TO=TIME
310 FOR M=1 TO N
320 WHILE TIME<TO + T(M):WEND
330 PRINT#8,CHR$(0);
340 FOR J=1 TO 100:NEXT
350 PRINT#8,CHR$(B(M));
360 NEXT M
```

You must use a *For-Next* loop to allow a fraction of a second for the motors to stop, where on the BBC an *Inkey (25)* has a built-in delay. The BBC's *Repeat-Until* becomes a *While-Wend*

The other problem was brought to my attention by Mr Weaver, the worried owner of a ZX81. Although I had checked the hardware for compatability with the Spectrum, I had not dreamed that the ZX81 would not implement an *Out* command in Basic! I consulted Alan Dibley, famous for massacring ZX81's to make Micromice, and his only suggestion was to resort to machine-code. It sounds tough, but is in fact quite simple.

According to Alan, if you start your program with a *Rem* statement, the first byte of the *Rem*'s text will be stored at address 16514. In this case we need just seven store locations, so the *Rem* is followed by *ABCDEFG* – soon to be obliterated by the machine code. Now the machine code consists of just three instructions: *Lda 16514 . Out (127),A . Ret*. These are turned into byte values (hex) 3A 82 40 . D3 7F : C9. Now you just have to poke these values into the right place. Add the following lines to the start of the Sinclair program given in the 14-20 March edition

```
1 REM ABCOEFG
2 LET p=16514
3 LET mc=16515
4 POKE mc,58
5 POKE mc+1,130
6 POKE mc+2,64
7 POKE mc+3,211
8 POKE mc+4,127
9 POKE mc+5,201
```

Now you can substitute two lines of program for each of the *Out* statements

```
350 POKE p,b(m)
355 LET j=USR(mc)

220 POKE p,0
225 LET j=USR(mc)

240 POKE p,k
245 LET j=USR(mc)

330 POKE p,0
335 LET j=USR(mc)
```

The Let statement is a dummy, just to allow the machine code at *(mc)* to be called by the *Usr* function. Be sure to *Save* the program before you try to *Run* it! When machine-code crashes, it can crash for good. Having to switch the machine off and on again and restarting to square one can really hurt!

By the way, you can see Alan's latest Micromice in action at the First European Personal Robotics Conference and Exhibition, London West Hotel, Lillie Rd. (near Earls Court), 2nd-4th July. That's where the British Finals of the Euromicro Micromouse competition will be held, now that the Computer Fair has vanished. With David Woodfield he will be turning up to take his mice to compete in the World Finals in Japan in August. The EPRC will also host the first British heat of Robot Ping-Pong – it should be worth seeing

# A step forward

***Jeremy Vine wonders who will buy the BBC+ ?***

After persistent rumours of a new BBC machine, Acorn has finally launched the BBC B+, an enhanced version of the B machine with 64K Ram, built-in Disc Filing System and a totally redesigned circuit board. This is not a 'model C' – that is expected for release this Autumn – but a BBC B with a few added extras. All the familiar connections on the model B are present and this is Acorn's answer to all those who have long been asking for an improvement to the system.

The new micro is priced at £499 and although the old model B will still be selling at discounted prices, it's expected that it will only survive as long as stocks last. The pricing of the machine looks likely to attract criticism considering the competition, so is the B+ worth the extra £100 price tag?

The first striking feature of the 'B+' is its appearance. The micro is in exactly the same casing as the old model B (and A!) There was no indication on the production machine I looked at that showed it was a B+ but Acorn says there will probably be a change to the plastic function key strip with the addition of the letters '64K'. The first sign of a new beast comes when switching on the micro.

A new message now appears in the top left-hand corner of the screen:

Acorn OS 64K

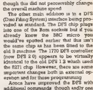
Acorn 1770 DFS

BASIC

Apart from this cosmetic change the screen display is precisely the same and there is no change to BBC Basic. The major changes lie in the additional hardware and a few new commands. Firstly, the hardware.

On opening the machine, the existence of a new micro becomes apparent and not just because the board shows itself to be Issue 1, 1984. The circuit board has been totally redesigned and virtually everything is now soldered: the only sockets remaining on the board are the sideways Rom sockets. Acorn have added an additional socket to make a total of six and moved them to the top left of the machine as tow rows of three sockets, making them far more accessible than the model B sideways Roms, which wase under the keyboard.

One criticism levelled at Acorn by BBC owners was insufficient spare sockets for extra Roms (languages, utilities etc). The addition of one more socket may seem a poor response considering the 16 RoM capacity but Acorn has now changed the Rom sockets so that 32K chips can be used. This has facilitated the saving of one socket by combining the OS and Basic chips into one. On the machine I had, this 32K OS/Basic chip was Rommed and was very definitely a



final version.

The 6502 at the heart of the old model B has now been replaced on the B+ with a 6512 which has the same language set but has a faster internal clock speed, though this did not perceivably change the overall machine speed.

The other main addition is in a DFS (Disc Filing System) interface being provided as standard. The DFS chip plugs into one of the Rom sockets but if you already know the BBC micro you would've spotted earlier that this isn't the same chip as has been fitted to the old B machine. The 1770 DFS controller (now DFS 2.0) appears to be virtually identical to the old DFS 1.2 which used the 8271 chip. However, there are some important changes both in external operation and for those programming.

Acorn have improved the DFS with additional commands though sadly one of the old DFS's worst features still remains, that being the limitation of 31 files on a disc. However, the new commands are a welcome sight and now include a **Form* command to format discs, this having been glaringly omitted from the old DFS. Other new DFS commands are **Close*, **Drive*, **Ex*, **Free*, **Map*, **Roms* and **Verify*.

**Drive* as on the old DFS changes the current drive being used, but now incorporates software to allow a 40 track disc to be read by 80 track drives. *Ex* supplies information about files in the present directory (length, address etc) identical to that of a **Info* command. **Free* and **Map* display information on the amount of space used and unused on a disc and aids the compacting process. Finally, **Roms* provide a catalogue of

the sideways Rom sockets and indicates the Rom number, the Rom title and whether the Rom is a service or language Rom or both. The 1770 also contains the Tube code or the second processors

Though the 1770 DFS is largely compatible with the old 8271 DFS, in that the commands have been extended, there are however firmware differences which will be causing software houses problems fo particular disc protection in the past has used various *Pokes* to the internal registers of the 8271 which of course is incompatible with the 1770. Initially anyone buying disc software for the B+ should check very carefully that the software will run on the machine

The use of another single density system is at first surprising, especially when the ADFS is available on the Electron. However, it's to Acorn's credit that it did not go for an ADFS implementation as had been expected, because this would have caused all manner of problems and made the machine largely incompatible

The other new commands relate to the extra memory provided with the B+. The 32K of extra Ram is split between 20K shadow Ram and 12K sideways Ram. The advantage of shadow Ram is that memory, which previously on the 'B' would be taken up with screen display (ie, 20K Mode 0) is now left free for use. The user can decide whether a shadow screen is to be used and either directly enter a shadow screen mode by typing Mode followed by the shadow screen equivalents of Modes 0 to 7 which are 128 to 135, or by entering **Shadow*, which forces the operating system to enter shadow mode on any subsequent screen mode change. This can be turned off by **Shadow 1*. The same can be achieved by using a *FX114 command

Shadow mode is retained after a soft break but is reset on a hard break. The command has been well thought out and offers maximum compatibility when running software designed for the old Beeb. This facility has to be welcomed and if the B+ is taken up by software houses, it should provide a whole new area of software writing, which has currently pushed the B machine to virtually its limitations

Finally, 12K of sideways Ram is available. This is an unfortunate figure but is a consequence of the 64K limit and that 20K of the extra Ram must be used as Shadow Ram for screen displays. However, it's still an improvement on the B and will no doubt be used to good effect. And that's it for the major changes. There are changes within the OS and obviously the memory map, but these are in the main to take account of the shadow Ram

The B+ comes with a revised user guide which looks even more comprehensive than the previous addition. As with the previous user guide it looks like an excellent reference work but is not suitable for learning programming

Existing BBC users may be wondering whether they can upgrade to a B+ specification. Considering the new circuit board, an entire upgrade is unlikely, though Acorn admits it is thinking making the board available through dealers. The extra Ram facility is virtually identical to the Aries Ram upgrade and many users will already be using that facility. At the end of the day the differences aren't tremendous enough to make it worth while buying the new version.

In principle I like the B+. It is a well (re)designed machine and is a logical step forward in the BBC system. The sticking point is the price £499, Acorn argues, is a good price relative to what the old BBC B offers. True enough. What Acorn refuses to acknowledge is that the BBC has been overpriced for far too long. The new machine, though with added extras, is probably cheaper to produce because the manufacturing process is far more automated due to an almost entirely soldered circuit board. In fact, this is very likely the reason for the redesign as costs on the old B were rising, due to the number of sockets to be worked on by hand.

I can't but wonder who will buy this machine. Few existing BBC owners will throw away their machines as the extras are available and many have already added the sideways Ram or DFS. At a price of £499, the B+ is hardly likely to attract those potential home owners who haven't taken the plunge so far. It seems Acorn's best hope, and probably its intended sales area, will be the education market who may be willing to pay for the extras. Whatever the market for the machine, it is over-priced. At a time when specifications are soaring and prices tumbling (Amstrad CPC664, Atari ST, etc), Acorn is pursuing what seems an almost suicidal pricing policy, one which has already placed the company in financial difficulties

The B+ is a worthy successor to the B and is a useful stop-gap until a model C appears. As a home micro, the pricing is too out of touch to compete with the likes of the Amstrad 664, which includes a built-in disc drive. But this isn't Acorn's intended market and it will hope that they can still attract the serious user. Here it has a chance as the machine is still unrivalled for its connections to the outside world, possibilities for expansion and performance. But in the end the pricing has to be the crucial deciding factor and frankly I feel it's far too expensive. The B+ is good but at £499 it's a case of too little, too late and too much.

# At the helm

***Christina Erskine** talks to Nick Bessey, Commodore's new general manager*

"I must be about the only person in Commodore who has never met Jack Tramiel," commented Nick Bessey, Commodore's new general manager and successor to Howard Stanworth.

He seems to see this as no advantage – since it means he is apart from the personality cult that surrounds Tramiel, having joined Commodore from IBM where he was a product manager, a month ago.

With Commodore's European software manager Gail Wellington describing Tramiel's departure from Commodore and subsequent takeover of Atari, as being "like one's parents getting divorced". I asked Nick how it felt to be a stepfather.

"I think you need to take away the personality cults and look at precisely what Commodore has achieved in the last year – it moved to Corby and set up a powerful manufacturing plant there, it announced and launched the PC10 and PC20 in a mature way and with plenty of supply. People I know in Commodore have a very clear idea about the combination of being the largest producer of microcomputers and with the broadest range.

"Our challenge now is to formulate a marketing programme, which gets all the products readily available in spite of the mutually exclusive split in the computer market between consumer and business systems.

"The discussions I've been involved in so far have been in the vein of a marketing challenge with our machines – and from that point of view I think discussion about Atari are irrelevant. The new Atari products are relatively limited – from a programming point of view."

The marketing challenge looks even greater in light of Commodore International's announced losses of $20.8m, blamed on the strong dollar, investment in new products and market uncertainty. The sheer scope of Commodore's own range doesn't help it act fast when necessary.

Commodore now presides over a range of micros that is the largest of any manufacturer, from the 'beginners' C16 to the Unix-compatible 900, particularly if you count the forthcoming 128 and Amiga machines. Nick Bessey's appointment, coming so soon after the launch of Commodore's IBM-compatible machines, gave rise to considerable speculation that Commodore would now be concentrating far more on the business market than its home products.

"The business systems area at Commodore certainly requires urgent attention, and, yes, frankly, it's a key issue; the PC10 and PC20 must be marketed very strongly."

The formula of strong marketing with plenty of stock is to be carried over to the launch of the C128, and the built-in disc version the C128D.

"I don't know now if the two machines will be launched simultaneously since it will depend on quantities of supply at launch time. However, I am confident we can announce them for the last four months of the year – before September if possible.

"What will probably happen is we'll sell the basic 128s initially, and then offer the 128D at competitive prices, for those who feel the built-in disc drive is essential. But it's the compatibility that's the strong point – we have done a lot of market research on the 128 in the US and it has had a very favourable response, particularly because of the compatibility."

However, Nick was unwilling to disclose firm details regarding the price for the machines. "I don't really want to disclose a price – it's about the only thing left that hasn't been disclosed." However, an equivalent to the German price of DM1135, which is about £315, is expected.

And what of Commodore's other new machine, the Amiga? Exciting rumour has suggested that the 256K Ram, 128K Rom machine will outdo anything seen so far for the home market.

It is the Amiga, too, that has caused such consternation between Atari and Commodore, over the graphics chip Daphne. Atari filed a suit against Commodore claiming the chip had been commissioned to graphic design company Amiga by Atari. Commodore then bought the company, and thus its machine with it.

The Amiga is now set for launch next year, not the end of this year, as has been reported previously. Could Atari's charges affect delays to its release?

"It *will* be next year when we bring the Amiga out in the UK, but the launch date is affected by our ability to produce the machine, not by lawsuits. I don't think the lawsuits have any effect on Commodore releasing the machine.

"I was absolutely astonished by the Amiga when I first saw it. Its graphics are an overwhelming strong point, just in terms of sheer quality and flexibility. Certainly there will be the opportunity to sell the Amiga to specialists – graphics designers and so on.

"It will also appeal to the experienced hobbyists among home computer users who want to compute with something extra in terms of high speed programming graphics."

I asked about pricing levels for the Amiga, reports of somewhere between $700 and $900 being the most popular at the moment.

"I honestly don't know what the exact price will be. Around just under $1000 reflects the threshold for that type of machine, and I'm sure the scale of production we plan will make for competitive prices."

How will the arrival of the Amiga affect the 128? With one relying largely on traditional technology, and the other on new, is there not a danger that the Amiga might not overwhelm the 128?

"Oh no, the 128 will certainly survive the arrival of the Amiga. They are for different markets, and the pricing will dictate that to a large extent. The 128 is for 64 upgraders, primarily. The Amiga will overall be more specialist, more state-of-the-art."

Top priority for now, however, has to be the marketing of current products, the 64 and IBM compatible in particular, especially with regard to the latest financial figures.





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# Software Reviews

## Forgetful

**Program** *Mindshadow* **Price** £19.99 **Micro** Commodore 64/Disc Drive **Supplier** Activision, 18 Harley House, Marylebone Road, London NW1.

In the computer industry, the old saying "You get what you pay for" can be particularly apt *Mindshadow* is the perfect example of this phenomenon. Although not cheap, it is a very slick and well-thought-out package. The disc not only includes the adventure, but also a "living tutorial" and a "sneak preview" The living tutorial would be great for novice adventurers as it introduces and explains the "art of adventuring". The sneak preview is just a small look at Activision's other disc-based adventure "The Trace Sanction". Now, down to the game.

The purpose of the game is certainly original – no orc-bashing or treasure seeking here. All you have to find out is who you are This isn't as simple as you start life with no possessions, stranded on a desert island. From there, you have to travel the world in a long search to reveal your past.

Each of the locations has a graphics picture and five or six lines of descriptive text. For a change, I really thought the graphics were worthwhile, and they certainly added to the atmosphere The sophisticated parser also makes this a great game for the beginner as the computer understands a wide variety of commands One of the more interesting features is a "help" function which relies on an old Condor to pass on various clues and hints I can't say the wretched bird helped me much, but perhaps you'll have more luck.

A big, user-friendly adventure for rich Commodore 64 owners

**Tom Hussey**

## Flushed

**Program** *Maverick* **Price** £6.95 **Micro** Spectrum 48K **Supplier** Cases Computer Simulations, 14 Langton Way, London SE3 7TL.

Before James Garner started his love affair with answer-phones in *The Rockford Files*, he played a flashy card sharp in a TV western called *Maverick* – now CCS are using this as the title of (guess what) a Poker simulation

The game pits you against five other players in a session of Jackpot Draw Poker

Much of the fun of playing Poker live is the interaction between each player, and I suspect, the fact you are risking hard earned cash at the same time And although CCS have programmed each of the computer players to react in different ways, I quickly came to the conclusion that *Maverick* is a poor substitute for the real thing

**John Cook**

## Mousey

**Program** *AMX Utilities* **Price** £14.95 **Micro** BBC B **Supplier** Advanced Memory Systems, Green Lane, Appleton, Warrington WA4 5NG.

The original AMX Mouse package, which appeared earlier this year, provided some excellent software to design icons and draw detailed pictures as well as the mouse and system Rom, but there was always the feeling that much more powerful software was waiting somewhere to be developed Advanced Memory Systems has now issued *Utilities*

Present users of the mouse will recognise *AMXart2* and *Icon Design* on the initial menu, but the *Utilities* disc has an additional six choices. *AMXart2* is identical to *Art* in the original package, but now has *Load Fills* as an option on the pull-down file menu. Along the base of the drawing area are 32 boxes containing various *fill* patterns. If you are drawing a house, for instance, instead of laboriously drawing each brick in the wall, it is only necessary to select the brick pattern with the mouse move it over the wall and this proceeds to fill with little bricks automatically.

Choosing the option *Pattern*, it is possible to design your own fills and save the new selection to disc

With the original software, it was only possible to have the extremes of small screen dumps or full A4 size If you have a Rom like *Printmaster* from Computer Concepts, you can now use a utility called *XdGen* to incorporate a screen dump command allowing you to produce intermediate sized drawings If you save a picture with the name *Pic1*, it can be loaded back in your own programs using **Desk* and then **Load Pic1* An option in *Utilities* called *Strip* removes the icons from the outside allowing you to save just your artwork. This can then be called from inside your own software

With *Utilities*, you can design icons to use in your own programs Either the icons on Rom or those designed by yourself can be loaded in and placed on the screen, which means it is now possible to design circuit diagrams or sheet music using the icons included which represent electronic components and musical notation.

Other features that have been included are routines to turn sections of your artwork through 90 or 180 degrees, to copy or reflect it, and an option to draw ellipses and arcs There is even a program called *Sketch* that draws in colour, although I didn't find this as useful as the other programs.

Although comparisons will be made between this and MacPaint – indeed the modest BBC looks quite like a Mac when running this software – it should be remembered that the Apple machine has four times as much Ram as the BBC, and also costs well over four times the price I still feel that the initial price of the AMX mouse is rather high, but *Utilities* is certainly worth every penny of £14.95

**John Scriven**




## Trapped

**Program** *Entombed* **Price** £9.95 **Micro** Commodore 64 **Supplier** Ultimate, The Green, Ashby de la Zouch, Leicestershire

When you ask Ultimate why they don't do *Sabre Wulfe* or *Knight Lore* for the CBM 64, they say things like, "err ... well ... we don't know much about the machine really ... um ..." If only more software houses were as ignorant.

First they came up with *Staff of Karnath* – an OK game but I never liked messing around with all those spells. Now, the follow up has been released going by the name of *Entombed* – very aptly named as it happens, I was entombed in my computer room playing it for hours.

Anyway, this time, our hero, Sir Arthur Pendragon, whilst on a 14-day half board package trip to Luxor, finds himself trapped inside the Great Sphinx – and the air is running out fast.

True to form, Ultimate aren't giving much away in the instructions – you choose from a number of actions by pressing Space, including *Jump* (for this read hilarious bunny hops), *Use Whip* and *Use Torch*. The only thing is ... you have to find the last two before you can use them.

The screen display is side on scrolling 3-D, as in *Staff of Karnath*, colourful, beautifully designed, with lots of local colour such as hieroglyphics, statues of Anubis and the like. The nasties include wandering mummies and tap dancing scorpions, which sap your life force – but can be dispelled with a crack of the whip.

So you wander around, ducking into various crypts, attempting to fathom out exactly what you are trying to do – whipping at everything that moves and swearing quietly and not so quietly at the Ultimate team who devised this particular warped form of torture. Definitely a must for any adventurer's collection.

**John Cook**

## Exhaustive

**Program** *GraphiQL* **Micro** QL **Price** £34.95 **Supplier** Talent Computer Systems, Curran Building, 101 St James Road, Glasgow

A painting sold in auction some time ago for a couple of million pounds – wouldn't it be nice if you could use your QL to create a similarly valuable masterpiece? If wishes were horses, but Talent Computer Systems is going to do its best to help you with its newly-released QL utility.

It is the best graphic utility to appear for the QL so far and is based on Talent's successful *Panorama(H)* utility for the Commodore 64.

Mind you, Talent charges you a pretty penny for helping to bringing out the hidden artist in the QL user.

What do you get? Two cartridges come in the large case, along with a 63-page manual. One of the cartridges contains the main program, plus a very well-documented printer dump utility to help you transfer your masterpiece to paper. The second cartridge is a little bundle of demo screens that show you what is possible with *GraphiQL* – you can load them in and mess about with them to your heart's content. The manual is pretty exhaustive, covering all the commands available as well as advice on drawing with a computer and photographing the results.

The 50-odd commands cover most of what the artist should want to do with a QL. You'll find freehand drawing possible, as well as rubber banding and instant circles, boxes and – unusually – ellipses. Colours can be instantly selected and changed, as well as the shape and width of the 'brush' – there's even an 'airbrush' available, which gives a random 'spatter' effect.

One very useful feature is a doodle pad, which allows you to try out ideas before transferring them to the main picture. This pad may also be used to define textures. Twenty-six of these can be designed and then assigned to the brush to be painted into the picture – they can also be saved for future use, so quite complex patterns can be built up, as well as often-used shapes, like trees or houses.

Full colour control is available, with swapping and merging being possible. As well as all this, you can magnify the screen – only to 16 times, though – for detail work, and rotate any work on the screen to your satisfaction. Drawing, however, despite all the facilities available, can be a rather tiresome operation. Inspiration can dry up pretty quickly while waiting for the cursor to crawl across the screen.

Despite the speed restrictions (this, I'm sure, is a function of the machine itself), and despite the high price which one must pay for almost any QL software, Talent's new utility should become the standard graphics package for the QL.

**Tony Bridge**

## Easy prey

**Program** *Digger Barnes* **Price** £6.95 **Micro** CPC 464 **Supplier** Cable Software, 52 Limbury Road, Luton, Beds LU3 2PL

Even though this is only a rehash of the ageing *Panic* arcade game – run up and down ladders, bang holes in platforms so that the pursuing monsters fall in etc, at first sight this looks like quite an attractive buy.

The game is not exorbitantly priced, has a witty title – playing on the *Dallas* character of the same name – and well-designed cassette inlay and graphics.

The monsters, especially, are particularly nasty looking and very fast.

The background is less impressive, though, with simple straight lines for platforms, ladders and little else. It looks absurdly simple when compared to the likes of Virgin Game's *Sorcery*.

Unfortunately the game is let down completely by the keyboard control. The actual choice of keys is quite good but they just will not respond, particularly the up/down controls.

Not only is it irritating sitting at the bottom of the ladder tapping away at the letter 'A' waiting for Digger to pull his finger out, but it makes you easy prey for the nasties, and makes the game unplayable.

It's a complete reverse of the normal situation – for once there are a lot of very nice touches, but the basic algorithm that drives the game is flawed.

If it could be rewritten to increase the frequency and efficiency of keyboard scanning, even at the cost of the speed of movement of the monsters, it would be a much much better game.

**Tony Kendle**

## Worthwhile

**Program** *Softaid* **Micro** Commodore 64 **Price** £4 99 **Supplier** Band-Aid Trust, c/o Stoy Hayward, 8 Baker Street, London W1

If you've been reading the computer magazines recently, you will have heard of *Softaid*. It is the computer Industry's answer to Band-Aid, a selection of ten games sold at a ridiculously low price Not only that the tape also contains the number one single *"Do They Know It's Christmas?"* (I'll leave you to decide whether that's good or bad) All the profits to the Ethiopian Famine Relief Appeal.

The games include. *Gumshoe* – Sort of platform game Great fun. Love the way you can mow down the baddies with your machine-gun gangster style *Beamrider* – Fairly basic shoot-em-up. Fast action, though, and good sound effects *Star-Trader* – A game of space-trading and double-dealing, complete with 3-D battles Similar to *Elite*, but not as good. *Gyropod* – Weird, space-shoot-out game Not bad, but not brilliant either *China Miner* – *Manic Miner* clone Guide Miner Wally through thirty very hard levels You'll probably recognise some of the characters from other popular games Pretty addictive *Kokotoni Wilf* – A massive, multi-screen, joystick adventure Journey through time meeting dinosaurs, spaceships and all. Fairly good but I didn't like the player control *Gilligan's Gold* – Another platform game Explore old mine-workings and collect gold. OK but unoriginal *Fred* – Maze game set in ancient pyramids Avoid hazards and gather treasure as you search catacombs Reasonable *Falcon Patrol* – One of my all-time favourite games Great, fast, supersonic jet-action. *Flak* – American game Dodge flak as you shoot down enemy installations. Good, but might lack lasting appeal

I reckon every Commodore 64 owner should buy a copy of this tape Not only would they receive an excellent selection of ten games, but they would also be donating money to help a most worthwhile cause

**Tom Hussey**

```
IN UNTIDY ROWS THEY LIE FRACILE WOODEN
CROSSES BEARING NAMES OF THE IMMORTAL &
THE IMMORAL.FROM CALAMITY JANE TO JESSE
JAMES THEIR BONES MINGLE IN FINAL ACCORD.
VISIBLE:                        DIRECTIONS
2 DOLLAR BILLS                    N S E
                                count     1
OK. NORTH
I CAN ONLY HANDLE THESE ONE AT A TIME
WHAT NOW RON   ? n
WHAT NOW RON   ?
```

## Essential

**Program** *Brawn Free* **Price** £2.00 **Micro** CPC 464 **Supplier** Nemesis, 10 Carlow Road, Ringstead, Northants

Fans of the Nemesis text adventures will certainly not be disappointed by this latest addition to the range even if it is sold at a budget price Here again are the superb sound effects, the excellent screen layout, the bizarre plot, the psychedelic settings and the absolutely outrageous sense of humour

This game has (superficially) a wild west theme, although the good old USA often gets rather jumbled in with our own Rochdale cowboys, and every opportunity is taken to squeeze a groan out of the innocent player with dreadful puns

Indeed, I can't remember when I last laughed out loud at a adventure game (unless as a comment on the standard of spelling) – try this one 'Big John Wayne was a masochist He used to like a cold bath in the mornings – so he didn't have one"

There's really not much more you can say Technically accomplished, if anything slightly more testing than the earlier games, spilling over with richness of imagery that obviously comes from years of watching cheesy westerns on Saturday afternoons and so packed full of originality it is like a breath of fresh air Nothing is taken seriously and there is not one Great Gnome of Tharg in sight, the spelling mistakes are deliberate, the humour so ridiculous that it is a joy to review, and an even more ridiculous price tag makes it an essential buy

**Tony Kendle**

## Skeleton plot

**Program** *Colossal Cave Adventure* **Price** £7.95 **Micro** CPC 464 **Supplier** Duckworth, The Old Piano Factory, 43 Gloucester Crescent, London NW1 7DY.

Pete Gerrard and the team at Ducksoft have been churning out a range of quite reasonable text adventures comparable in some ways to the *Quilled* Spectrum games but with the technical know-how supplied by Pete's own book on writing adventures.

The problem is that here is already a definitive, and, I have to say, much superior version of the game available for almost all home micros at just a couple of pounds more. For instance, Ducksoft have made a point that their version sticks exactly to the original layout of the game, by which I suppose they mean that it does not have the 70 extra locations, voluminous prose, or attractively redesigned text of the Level 9 version of Colossal

Ducksoft's effort is quite competent, with adequate response speeds, etc, but playing it seems to be like reading a *Reader's Digest* precis of a great novel – the skeleton of the plot is there but none of the nuances. Unless you are very hard up or are an adventure purist who regards any tampering with the original as an affront, you get what you pay for, ie, less

**Tony Kendle**

## Puzzles

**Program** *Mystery of the Java Star* **Price** £5 75 **Micro** CPC 464 **Supplier** Shards Software, 169 Eton Road, Ilford, Essex IG1 2UQ

Shards have got themselves a good reputation for trying to do something different in the clichéd world of computer games For those that don't know, their programs usually come under some heading such as 'educational adventure', but usually they consist of series of puzzles rather than what anyone would think of as a true adventure

I must confess that it is a formula that tends to leave me cold but that's only personal preference – I can recognise a well implemented idea and some people swear by these games You can't criticise the value for money considering that there is over 100K of code on the tape

Advertised as a 'game for all the family', it probably has more in common with Sunday afternoons playing Monopoly than with your usual solitary computer fare

Indeed although you can see where the educational element comes in, this is a bit underplayed and it would probably work better with a teacher or parent at hand to build upon the ideas presented in the game

**Tony Kendle**

# Invaders

**Repel all borders in this all-action shoot 'em up for the Sinclair QL by G R Taylor**

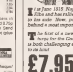
It is bonfire night on the Planet Zog, and they plan to celebrate by turning Earth into one big Roman Candle! Only you can save us as you manoeuvre your sight using the cursor keys (additionally pressing Space to move faster), launching missiles using Enter. Be quick, as the alien ships will fire at your laser base as they land – each time it is hit, the effectiveness of the missiles decreases. Are you up to the challenge of Invaders?! Have fun.



```
100 MODE 4
110 REMark invader
120 REMark by GR Taylor
130 intro
140 set_screens
150 initialise
160 game
170 :
180 DEFine PROCedure set_screens
190  WINDOW 512,256,0,0:CLS
200  WINDOW 448,180,32,16
210  OPEN #7,con_448x30a32x196
220  OPEN#4,scr
230  OVER -1
240  BORDER 1,4:PAPER 0:CLS
250  FOR n=1 TO 75
260   INK RND(5 TO 7)
270   POINT RND(180),RND(100)
280  END FOR n
290  INK 7
300  PAPER #7,4:INK #7,1
310  CLS #7
320  FILL 1:CIRCLE 92,0,2:FILL 0
330  SCALE #7,40,0,0
340  scores
350 END DEFine set_screens
360 :
370 :
380 DEFine PROCedure game
390   REPeat cycle
400    move_invader
410   END REPeat cycle
420 END DEFine game
430 :
440 :
450 DEFine PROCedure move_invader
460     IF aliens<=0 THEN contact$=
    "ALIENS DEFEATED":scores:tune:fin
470     CURSOR bx,by,-5,-5
480     PRINT "+"
490     CIRCLE ix,iy,1,4,0
500     ix=ix+RND(-spd TO spd)
510     iy=iy-RND(1 TO spd)
520     IF iy<0 THEN spd=spd+.1:build_
        bomb:iy=100:ix=RND(180):
        aliens=aliens-1
530     IF ix>180 THEN ix=ix-10
540     IF ix<0 THEN ix=ix+10
550     f=RND(4)
560     CIRCLE ix,iy,1,4,0
570     IF shots=0 THEN
        spd=25:GO TO 640
580     IF f=4 THEN fire
590     shot=0
600     CURSOR bx,by,-5,-5
610     PRINT "+"
620     poll
630     IF shot=1 THEN shoot
640 END DEFine move_invader
650 :
660 :
670 DEFine PROCedure fire
680     attack=RND(10)
690     LINE ix,iy TO 87+attack,0
700     BEEP 5000,255,10,100,-1,15
710     LINE ix,iy TO 87+attack,0
720     IF attack=8 THEN BEEP 0,255,
        100,5,5,5:contact$="DAMAGED
        SUSTAINED":power=power*.9:
        skill=INT(skill*.9):scores:
        FOR n=6 TO 9:CIRCLE 92,0,n:
        CIRCLE 92,0,n:NEXT n:
        contact$="READY":scores:BEEP
730 END DEFine fire
740 :
750 :
760 DEFine PROCedure poll
770   key=KEYROW(1)
780   SELect ON key
790   =2
800   bx=bx-4
810   =66
820   bx=bx-12
830   =16
840   bx=bx+4
850   =80
860   bx=bx+12
870   =4
880   by=by+4
890   =68
900   by=by+12
910   =128
920   by=by-4
930   =192
940   by=by-12
950   =1
960   shoot
970  END SELect
980 END DEFine poll
990 :
1000 :
1010 DEFine PROCedure shoot
1020  IF shots<=0 THEN contact$="NO
      MISSILES":scores:RETurn :ELSE
      contact$="MISSILE LAUNCHED"
1030  shooting=1
1040  shots=shots-1:scores
1050  CURSOR bx,by,-5,-5
1060  PRINT "+"
1070  strike=0:sx=92:sy=0
1080  BEEP 0,0,20,57,1
1090  dx=ABS(bx-sx)
1100  dx=dx*power/((ABS(bx-sx)+by)/12)
1110  IF bx<sx THEN dx=-dx
1120  dy=(by-sy)*power/(
      (ABS(bx-sx)+by)/12)
1130  REPeat loop
1140  syy=sy:sxx=sx
1150  sx=sx+dx:sy=sy+dy
1160  LINE sxx,syy TO sx,sy
1170  LINE sxx,syy TO sx,sy
1180  evade
1190  IF sy>=by  THEN BEEP:EXIT loop
1200  END REPeat loop
1210   IF bx>ix-(skill+1) AND bx<ix+
       (skill+1) AND by>iy-(skill+1)
       AND by<iy+(skill+1) THEN
       contact$="CONTACT":hit:
       ELSE contact$="NO CONTACT":miss
1220 END DEFine shoot
1230 :
1240 :
1250 DEFine PROCedure hit
1260  strike=1
1270  score=score+INT((100/skill))
1280  pop
1290 END DEFine hit
1300 :
1310 :
1320 DEFine PROCedure initialise
1330  ix=RND(180):iy=110:REMark
      invader co-ords
1340  bx=92:by=50:REMark sight co-ords
1350  score=0
1360  aliens=20-INT(skill/2):REMark
      more aliens at higher
      skill levels
1370  parts=0:REMark when parts=6
      bomb explodes
1380  shots=15
1390  spd=2:REMark speed of spacer
1400  power=1:REMark radius of blast
      and speed of missiles
1410  contact$="READY"
1420  scores
1430  popp=0:REMark flag for
      missile explosion
1440 END DEFine initialise
1450 :
1460 :
1470 DEFine PROCedure pop
1480  BEEP 0,255,210,1500,1,5,11,0
1490  popp=1
1500  FOR mm=1 TO 2
1510   FOR nn=1 TO skill
1520     IF ix<bx+skill AND ix>bx-skill
      AND iy<by+skill AND iy>by-skill
      AND popp=1 THEN strike=1
1530     IF strike=0 THEN evade
1540     INK 7
1550     CIRCLE bx,by,nn
1560   END FOR nn
1570  END FOR mm
1580  CURSOR bx,by,-5,-5
1590  PRINT "+"
1600  scores
1610  popp=0
1620  IF strike=1 THEN explode
1630  BEEP
1640 END DEFine pop
```

# Star Game

```
1650 :
1660 :
1670 DEFine PROCedure explode
1680  contact$="TARGET DESTROYED"
1690  aliens=aliens-1
1700  scores
1710  BEEP 0,255,210,1500,1,5,11,0
1720  CIRCLE ix,iy,1,4,0
1730  FOR mm=1 TO 2
1740  FOR nn=2 TO 12
1750   INK 7-INT(nn/3)
1760   POINT ix+nn,iy:POINT ix,iy+nn:POINT
       ix-nn,iy:POINT ix,iy-nn
1770   POINT ix+nn/2,iy+nn/2:POINT ix+nn/2,
       iy-nn/2:POINT ix-nn/2,iy+nn/2:
       POINT ix-nn/2,iy-nn/2
1780  END FOR nn
1790  END FOR mm
1800  score=score+INT((100/skill))
1810  INK 7
1820  contact$="READY":scores
1830  spd=spd+.1:ix=RND(180):iy=105:
      CIRCLE ix,iy,1,4,0
1840 END DEFine explode
1850 :
1860 :
1870 DEFine PROCedure evade
1880   CIRCLE ix,iy,1,4,0
1890   ix=ix+RND(-spd TO spd):iy=iy-RND*spd
1900   IF papp=1 OR shooting=1 THEN GO TO 1920
1910    IF iy<0 THEN spd=spd+.1:build_bomb:
      iy=100:ix=RND(180):aliens=aliens-1
1920   IF ix>185 THEN ix=ix-10
1930   IF ix<0 THEN ix=ix+10
1940   CIRCLE ix,iy,1,4,0
1950 END DEFine evade
1960 :
1970 :
1980 DEFine PROCedure miss
1990   pop
2000   contact$="READY"
2010   scores
2020 END DEFine miss
2030 :
2040 :
2050 DEFine PROCedure scores
2060  OVER #7,0
2070  AT#7,1,2:PRINT#7,"SCORE ";score;"
      ";AT#7,1,12:PRINT#7,"missiles ";shots;"
      ";AT#7,1,24:PRINT#7,"ALIENS ";aliens;"
      ";AT#7,1,34:PRINT #7,"power ";skill;" "
2080  AT#7,1,45:PRINT#7,"CONTROL  ";"
2090  AT#7,1,45:PRINT#7,"CONTROL  ";contact$
2100 END DEFine scores
2110 :
2120 :
2130 DEFine PROCedure intro
2140  WINDOW 512,256,0,0:CLS
2150  WINDOW 448,250,32,0:BORDER 2,5:
      PAPER 1:INK 6:CLS
2160  BEEP 0,255,10,100,-1,15
2170  CSIZE 3,1
2180  t$="NO ALIENS TODAY,THANKS"
2190  FOR i=1 TO LEN(t$)
2200  CURSOR (280-9*i)+26,6
2210  PRINT t$(1 TO i):PAUSE 5
2220  NEXT i
2230  OVER 1:FOR cn=6 TO 21:CSIZE 3,1:
      CURSOR cn+20,cn:INK 8-cn/3 :PRINT;
      "NO ALIENS TODAY,THANKS":END FOR cn:
      INK 7:CURSOR cn+21,cn+1:PRINT;t$
2240    BEEP
2250  BEEP
2260  CSIZE 2,0:AT 7,1:INPUT;
      "INSTRUCTIONS (Y/N)? ";yn$
2270  IF yn$="Y" OR yn$="y" THEN instructions
2280  CSIZE 2,0:AT 10,1:INPUT;"select skill
      level 1(hard)"!!" to 10(easy)";skill
2290  IF skill>10 OR skill<1 THEN GO TO 2150
2300 END DEFine intro
2310 :
2320 :
2330 DEFine PROCedure build_bomb
2340   parts=parts+1
2350   contact$="ALIEN No ";parts;" LANDED"
2360   scores
2370   FOR bombx=ix TO 185 STEP 4
2380    CIRCLE bombx,2,1,4,0
2390    CIRCLE bombx,2,1,4,0
2400   END FOR bombx
2410   construct
2420   contact$="READY"
2430    scores
2440 END DEFine build_bomb
2450 :
2460 :
2470 DEFine PROCedure construct
2480    SELect ON parts
2490     =1
2500     WINDOW#4,30,20,448,175:SCALE#
    4,30,0,0: BORDER#4,1,2 CLS#4
2510     = REMAINDER
2520     fit
2530     END SELect
2540 END DEFine construct
2550 :
2560 :
2570 DEFine PROCedure fit
2580   BORDER#4,1,2
2590   SELect ON parts
2600   =2 : FOR p=0 TO 10:LINE#4,0,p
       TO 100,p:END FOR p
2610   =3 : FOR p=11 TO 20:LINE#4,0,p
       TO 100,p:END FOR p
2620   =4 : FOR p=21 TO 30:LINE#4,0,p
       TO 100,p:END FOR p
2630   =5 : PRINT#4,"BOMB"
2640   =6 : detonate
2650   END SELect
2660 END DEFine fit
2670 :
2680 :
2690 DEFine PROCedure detonate
2700  contact$="ALIEN  VICTORY"
2710  scores
2720  FOR n=1 TO 30
2730   BEEP 500,n
2740   RECOL#4,2,3,4,5,6,7,0,1
2750  NEXT n
2760  BEEP 0,255,210,1500,1,5,11,0
2770  FOR n=1 TO 4
2780   SCROLL-2:SCROLL 2
2790  NEXT n
2800  BEEP 0,255,210,1500,1,5,11,0
2810  FOR m=1 TO 30
2820   PAPER 2:SCROLL-7
2830  NEXT m
2840  fin
2850 END DEFine detonate
2860 :
2870 :
2880 DEFine PROCedure fin
2890  PAPER 0
2900  CLS
2910 OVER 1:FOR cn=6 TO 61:CSIZE 3,1:
     CURSOR 3*SIN(cn)+120,2*COS(cn)+60:
     INK ABS(100*COS(cn)) :PRINT;
     "END of GAME":END FOR cn:INK 7
2920   BEEP 0,8:PAUSE 20:BEEP 0,14:
     PAUSE 30 BEEP
2930 AT 6,3:INPUT;"ANOTHER GAME ?(Y/N) ";g$
2940  CSIZE 2,0
2950 IF g$="Y" OR g$="y" THEN RUN:
     ELSE CLOSE#4:CLOSE#7:STOP
2960 END DEFine fin
2970 :
2980 :
2990 DEFine PROCedure instructions
3000  CSIZE 3,1:CLS:PRINT "   "; t$:
      CSIZE 1,1:PRINT "            by
      GR Taylor ":CSIZE 2,0:tune
3010  PRINT:PRINT"IT IS BONFIRE NIGHT ON
      THE PLANET   ZOG AND THEY PLAN TO
      CELEBRATE BY   TURNING YOUR PLANET
      INTO A VERY BIG ROMAN CANDLE  IF SIX
      ALIEN SHIPS   LAND THEY WILL ASSEMBLE
      AND DETONATETHEIR ATOMIC DEVICE.
      USE CURSOR     KEYS AND SPACE BAR
      TO MOVE YOUR     SIGHTS, ENTER TO
      FIRE. IF THEY HIT  YOUR BASE THE
      SPEED OF YOUR MISSILESWILL BE REDUCED.
      ":PRINT"  ANY KEY TO START"
3020  PAUSE:CLS
3030 END DEFine instructions
3040 :
3050 :
3060 DEFine PROCedure tune
3070  OVER 0
3080   RESTORE
3090   FOR n=1 TO 16
3100    READ a,b
3110    BEEP 0,a+5:PAUSE b
3120   END FOR n
3130   BEEP
3140 END DEFine tune
3150 :
3160 DATA 25,20,12,20,15,10,17,10,20,10
3170 DATA 5,20,12,20,15,10,17,10,20,10
3180 DATA 5,20,12,20,15,10,17,10,15,10
3190 DATA 20,50
```



# Into code . . .

*This week how to usa Compiler on your own programs – plus a demo game – all from* ***A Mehmood***

Now you have typed in the compiler, you can use it on your own programs To enter programs simply enter the listing of your Basic program to be compiled as you would enter a normal program, except the lowest line number you can use is 1000, because the compiler is stored in the lines 0-999

Once you have entered your program you must take care of the following -

i) All *Gosub's* should be satisfied with *Return* statements.

ii) To return back to Basic you must have a Return statement iii) All machine code routines/sub routines called using the *Usr* statement must have a *Return* statement within them.

iii) The *Stop* command will cause a direct return to *Basic*

Now *merge* your program with *Compiler* Once all the above has been done the program is ready to be compiled To compile the program simply run the compiler by entering *Run*. The word *Compiler* will appear on the screen and there will be a slight pause, if the message 'Check Sum error check Data... ' appears on the screen it means that the data entered in Lines 980-984 is incorrect and therefore it should be checked very carefully and corrected. The compiler can then be run again. If all is well the compiler will begin to print out the Commands, Statements and Functions as they are being compiled

Should there be an error in your Basic program the compiler will print a suitable error message, and tell on which line the error occurred so that it can be corrected and the compiler run again

If no errors occured through the whole program, the message 'Compiled' will appear on the screen together with another message telling you two addresses between which the machine code can be stored. A suitable address between the two addresses should be entered, it is advised to choose the lowest of the two addresses to store the code unless you have another machine could program stored there Once you have entered the address you wish your code to be stored at there will be another pause (dependent on the size of the program, normally between 1 min - 10 mins) after which the screen will be cleared and another two values will be printed The first value will be the start address of your machine code and the second value will be the length of your machine code.

It is advised that you save both your Basic and machine code programs onto tape before you attempt to run the machine code program It should be noted the machine code program will not run unless the first line of the compiler is in memory, in, once a program has been compiled a *Line 0* will be created which must be present when running the machine code Once the programs have been saved, the machine code can be tested by using the *Usr* command as used in Sinclair Basic

If the *'Out of Memory'* error occurs whilst a program is being compiled it means the program you are compiling is too long and therefore it should be split up into subroutines and compiled subroutine at a time The compiler, when run, erases every thing in the memory therefore if two subroutines are being tested both should be loaded in first and then tested.

Now you are ready for the demo program. Type in the listing of the demo program – then merge with Compiler Now simply type in *Run*.

The compiler will begin to print out the commands and statements as it compiles them Once this has been done the compiler will ask you whether you want to store your compiled machine code Enter a suitable address as told in the instructions of the compiler There will now be a delay as the compiler loads the machine code into memory. (It will take approx 7½ mins )

Once the code has been loaded into memory the compiler will print the address of where the code was stored and its length in bytes You should now save the machine code as explained in the Spectrum Manual You should also *Save* the compiler with your program

If you *List* the compiler you will find a *Line 0* has appeared and an error will be printed. This is perfectly normal. To run any compiled programs Line Zero must be present in your programs, therefore it is a good idea to delete all the compiler and save Line Zero for later use by compiled programs Once you have deleted all the compiler (except Line Zero) save the line as you would a normal Basic program (This can now be used by all compiled programs that are to be run independently of the compiler )

Although the compiled program will now run independently of the compiler (so long as Line Zero is present) it is a good idea to add a little Basic program to your machine code to improve it (you may wish to add instructions to your program or have a title page, etc)

A simple example of what I mean can be seen in Basic program that accompanies the demo program, listing two. If you type in *Goto 9999* the program will save itself together with the machine code and will auto run when loaded.

Note that the second *Save* instruction in Line 9999 is dependent on where you stored your code, so change this appropriately Also when running compiled programs, before they have even been loaded you must clear a suitable address If you do not know how to, type in *Clear 49999* as a direct command and then load in your program as normal.

*Compiler* is available on tape from me for £2 75 at 30 Webber House, North St, Barking, Essex.

```
5>REM print instructions
10 BORDER 0: PAPER 0: INK 7: CLS
18 PRINT AT 0,10;"DEMO PROGRAM"
30 PRINT AT 10,11;"Q ---  UP"
40 PRINT AT 12,11;"Z --- DOWN"
50 PRINT AT 16,11;"O --- LEFT"
60 PRINT AT 18,11;"P --- RIGHT"
70 PRINT AT 21,6;"PRESS ANY KEY TO PLAY"
80 PAUSE 0
100 REM run machine code
101 CLS
105 PRINT "EAT THE GREEN   AND AVOID THE
   MAGENTA  .": PRINT "YOU ARE THE
   WHITE  ": PRINT '''EACH SHEET GETS
   MORE AND MORE   DIFFICULT AND FASTER"
106 PRINT AT 21,6;"PRESS ANY KEY TO PLAY"
107 PAUSE 0
110 LET l=USR addr of code
120 PRINT AT 10,10;"GAME OVER"
130 FOR F=0 TO 1000: NEXT F
140 GO TO 1
9000 REM load machine code
     automatically...... Remember
     to clear before loading machine code
9001 BORDER 0: PAPER 0: CLEAR 49999
9002 REM set cap shift on and put UDG
     at a safe address
9003 POKE 23675,200: POKE 23676,255:
     POKE 23658,8
9010 LOAD ""CODE
9015 RESTORE
9020 FOR F=USR "A" TO USR "C"+7
9030 FOR F=USR "A" TO USR "C"+7
9035 REM define UDG graphics
9040 READ a: POKE f,a: NEXT f
9050 GO TO 1
9060 REM data for UDG graphics
9070 DATA BIN 00111100
```

```
9071 DATA BIN 01111110
9072 DATA BIN 11111111
9073 DATA BIN 11111111
9074 DATA BIN 11111111
9075 DATA BIN 11111111
9076 DATA BIN 01111111
9077 DATA BIN 00111100
9078 REM
9080 DATA BIN 00011000
9081 DATA BIN 00011000
9082 DATA BIN 00011000
9083 DATA BIN 11111111
9084 DATA BIN 11111111
9085 DATA BIN 00011000
9086 DATA BIN 00011000
9087 DATA BIN 00011000
9088 REM
9090 DATA BIN 10000001
9091 DATA BIN 01000010
9092 DATA BIN 00100100
9093 DATA BIN 00011000
9094 DATA BIN 00011000
9095 DATA BIN 00100100
9096 DATA BIN 01000010
9097 DATA BIN 10000001
9098 REM end of data
9999 SAVE "DEMO" LINE 9000: SAVE
     "DEMO CODE"CODE addr of code,
     length of code
1000 BORDER 7: PAPER 0
1001 LET l1=10: LET s=0: LET l=3
1005 INK 7: CLS
1010 INK 5
1020 LET C=1: LET f=1
1030 LET a=1+RND+RND+RND
1031 IF a>31 THEN  LET a=a-31
1040 LET a1=1+RND+RND
1041 IF a1>21 THEN  LET a1=a1-21
1045 IF ATTR (A1,A)=5 THEN  LET C=C+1
1050 PRINT AT a1,a;CHR$ 144
1060 LET f=f+1: IF f<l1 THEN  GO TO 1030
1070 PRINT AT 0,0;CHR$ 83;CHR$ 67;CHR$
     79;CHR$ 82;CHR$ 69;CHR$ 45;s
1080 PRINT AT 0,23;CHR$ 76;CHR$ 73;CHR$
     86;CHR$ 69;CHR$ 83;CHR$ 45;l
2000 LET x=15: LET y=11
2010 LET n=80
3000 INK 8
3005 LET x1=x: LET y1=y
3010 LET a=CODE INKEY$
3019 IF a=81 THEN  LET y=y-1: LET n=a
3020 IF a=90 THEN  LET y=y+1: LET n=a
3030 IF a=79 THEN  LET x=x-1: LET n=a
3035 IF a=80 THEN  LET x=x+1: LET n=a
3040 IF X=0 THEN  LET N=80
3041 IF X=32 THEN  LET N=79
3042 IF Y=22 THEN  LET N=81
3043 IF Y=0 THEN  LET N=90
3045 IF N<>A THEN  LET A=N: POKE
     23560,n: GO TO 3019
3050 PRINT AT y,x;CHR$ 145: PRINT AT
     y1,x1;CHR$ 32
3055 BEEP (1000/(L1/10)),(1000/L1)
3060 IF ATTR (y,x)=5 THEN  GO SUB 5000
3070 IF ATTR (y,x)=3 THEN  GO TO 6000
3080 GO TO 3000
5000 LET a=1+RND+RND+RND
5010 LET a1=1+RND+RND
5015 IF a>31 THEN  LET a=a-31
5025 IF a1>21 THEN  LET a1=a1-21
5030 INK 3
5035 IF ATTR (A1,A)=5 THEN  LET C=C+1
5040 PRINT AT a1,a;CHR$ 146
5045 INK 7: PRINT AT y,x;CHR$ 32
5050 LET f=0
5060 BEEP f,f: LET f=f+1: IF f<30 THEN
     GO TO 5060
5065 LET S=S+10
5066 PRINT AT 0,6;S
5070 LET c=c+1: IF c=l1 THEN
     LET l1=l1+10: GO TO 1005
5080 RETURN
6000 IF l=0 THEN  RETURN
6010 LET l=l-1: GO TO 1005
```

## COMMODORE 64 COMMODORE 64

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PD008

# Broadcast quality

*Catch those late-night software broadcasts without burning the midnight oil – thanks to **Chris Baker***

This program allows the user to record radio programmes automatically, by using the cassette remote jack plug from a BBC micro. I have found the program very useful for recording software broadcasts late at night, or when I can't be around to do it manually.

The program is self explanatory, simply plug the cassette jack plug into the remote socket on any cassette-radio, tune the radio to the desired station, set the machine to record and run the program. Enter the present time, the start and finish times, and the program will switch the recorder on and off at the appropriate moments.

```
   10 REM  AUTOMATIC RECORDING TI
MER
   15 REM  BY CHRIS BAKER
   20*TV255
   30MODE 7
   40PROCHEADER
   50PROCNOW
   60PROCSTART
   70PROCEND
   80PROCAUTO
   90END
  100REM
  110DEFPROCNOW
  120VDU23;8202;0;0;0;
  130PRINTTAB(0,3)CHR$131"WHAT TI
ME IS IT NOW? (24HR CLOCK)"
  140PRINT
  150INPUT"HOURS ",H
  160INPUT"MINUTES ",M
  165IFH>23 OR M>60 THEN PROCMIST
AKE :RUN
  170TIME = H * 360000 + M * 6000
  180REPEAT
  190PROCCLOCK:PROCDISPLAY
  200UNTIL TIME> (H * 360000 + M
* 6000)+100
  210ENDPROC
  220DEFPROCSTART
  230PRINTTAB(0,7)CHR$131"WHAT TI
ME DOES THE PROGRAM START?"
  240PRINT
  250INPUT"HOURS ",SH
  260INPUT"MINUTES ",SM
  265IFSH>23 OR SM>60 THEN PROCMI
STAKE :RUN
  270ENDPROC
  280DEFPROCEND
  290PRINTTAB(0,11)CHR$131"WHAT T
IME DOES THE PROGRAM END?"
  300PRINT
  310INPUT"HOURS ",EH
  320INPUT"MINUTES ",EM
  325IF EH>23 OR EM>60 THEN PROCM
ISTAKE :RUN
  330PRINT'CHR$131"PLEASE SET TAP
E TO RECORD AND PLUG IN  "CHR$131
"REMOTE JACK PLUG.YOU MAY TURN OF
F THE  "CHR$131"MONITOR."
  340ENDPROC
  350DEFPROCAUTO
  360REPEAT
  370PROCCLOCK:PROCDISPLAY
  380UNTIL HR=SH AND MIN>= SM
  390*FX137,1
  400REPEAT
  410PROCCLOCK:PROCDISPLAY
  420UNTIL HR= EH AND MIN>= EM
  430*FX137,0
  440PRINTTAB(7)CHR$130;CHR$136"R
ECORDING COMPLETED"
  450ENDPROC
  460REM
  470DEFPROCCLOCK
  480SEC=(TIME DIV 100) MOD 60
  490MIN=(TIME DIV 6000) MOD 60
  500HR=(TIME DIV 360000) MOD 24
  510ENDPROC
  520REM
  530DEFPROCDISPLAY
  540PRINTTAB(14,20)CHR$141;HR;":
";MIN;CHR$134;SEC;"   "
  550PRINTTAB(14,21)CHR$141;HR;":
";MIN;CHR$134;SEC;"   "
  560ENDPROC
  570DEFPROCHEADER
  580PRINTTAB(9,0)CHR$141;CHR$132
;CHR$157;CHR$134;"AUTO RECORDER
";CHR$156
  590PRINTTAB(9,1)CHR$141;CHR$132
;CHR$157;CHR$134;"AUTO RECORDER
";CHR$156
  600ENDPROC
  700DEFPROCMISTAKE
  710PRINTCHR$129"Don't be silly'
";B=GET
  720ENDPROC
```

# Statistically correct

*Number crunching time with this statistics program for CBM 64 by* ***D J Peart***

Straight 'number crunching' is probably one of the best uses you can put any home computer to, and the discipline requiring it you are most likely to encounter is, of course, statistics

In the absence of a good programmable calculator, this program will produce a range of statistical information from sample data that is input by the user

As usual, interpretation is left up to the user, but remember to watch your sample size and keep the power dry.

**Program Notes**

| Line No | |
|---|---|
| 20-30 | Set border, paper ink colour |
| 110 | Dimension A, V and W |
| 120-180 | Initialise maximum and minimum numbers, zeroise number of data items |
| 160-270 | Input data items, check for valid inputs, update variables |
| 280 | Print wait message on screen |
| 290 | Calculate range |
| 300 | Calculate mean |
| 310-360 | Sort numbers into descending order |
| 370-450 | Calculate median |
| 460-600 | Calculate mode |
| 610-720 | Calculate variances, standard deviation, mean deviation |
| 730-805 | Clear screen and print information |
| 820-860 | Option for displaying ordered list of data |
| 890-930 | Option to run program again |
| 940-970 | Subroutine used in sort procedure |

```
10 REM   STATISTICS   PROGRAM
15 REM
20 POKE 646,1 POKE 53281,0 POKE 53280,0
30 PRINT"J"
110 DIM A(1000) DIM V(1000) DIM W(1000)
120 LET MIN=999999999
130 LET MAX=-999999999
140 LET TAL=0
150 LET NUMDAIT=0
160 FOR N=1 TO 1000
170 INPUT "ENTER DATA ITEM ",A$
175 PRINT "J"
180 IF N=2 AND A$="E" THEN LET NUMDAIT=1:
    LET TAL=A(1) LET RANGE=0 LET MD=A(1)
181 IF N=2 AND A$="E" THEN LET MN=A(1)
    LET MODE=A(1) LET ME=0 LET M5=0
182 IF N=2 AND A$="E" THEN LET PSD=0 LET
    SAMPSD=0 LET VP=0 LET VS=0 GOTO 720
184 IF N=1 AND A$="E" THEN PRINT"ZERO
    ITEMS INPUT"
185 IF N=1 AND A$="E" THEN PRINT"NO DATA
    AVAILABLE" GOTO 900
190 IF A$=" "THEN PRINT"YOU HAVE INPUT AN
    EMPTY STRING.LAST ITEM RECORDED WAS ";
    A(N-1)
191 IF A$="" THEN GOTO 170
200 IF A$="E" THEN LET N=1000  GOTO270
210 IF N=1 AND ASC(A$)<43 OR ASC(A$)>57
    THEN PRINT"YOU HAVE JUST INPUT AN
    INVALID DATA",
214 IF N=1AND ASC(A$)<43 OR ASC(A$)>57
    THEN PRINT" ITEM (""",A$""")" GOTO170
215 IF N>1 AND ASC(A$)<43 OR ASC(A$)>57
    THEN PRINT"YOU HAVE JUST INPUT AN
    INVALID"
216 IF N>1AND ASC(A$)<43 OR ASC(A$)>57
    THEN PRINT" ITEM (""",A$,""")"
    GOTO 170
220 LET A(N)=VAL(A$)
230 LET NUMDAIT=NUMDAIT+1
240 LET TAL=TAL+A(N)
250 IF A(N)<MIN THEN LET MIN=A(N)
260 IF A(N)>MAX THEN LET MAX=A(N)
265 PRINT"J"
270 NEXT N
280 PRINT"JMMMMMMMMM",TAB(8),"PLEASE WAIT"
290 LET RANGE=MAX-MIN
300 LET MN=TAL/NUMDAIT
310 REM SORT PROCEDURE
320 FOR X=1 TO NUMDAIT
330 FOR Y=1 TO NUMDAIT-1
340 IF A(Y)<A(Y+1)THEN GOSUB 420
350 NEXT Y
360 NEXT X
370 REM MEDIAN
380 LET M1=INT (NUMDAIT/2)
390 IF M1=NUMDAIT/2 THEN LET O1=M1
    LET O2=M1+1
395 IF M1=NUMDAIT/2 THEN LET MD=
    (A(O1)+A(O2))/2
400 IF M1<>NUMDAIT/2 THEN LET PO=M1+1
    LET MD=A(PO)
410 GOTO 460
420 LET T=A(Y)
430 LET A(Y)=A(Y+1)
440 LET A(Y+1)=T
450 RETURN
460 REM MODE
470 LET ZEROC=0
480 LET V(1)=1 LET W(1)=A(1)
490 LET UM=0
500 FOR N=1 TO NUMDAIT
510 LET V(N)=1 LET W(N)=A(N)
520 IF W(N)=0 THEN LET ZEROC=ZEROC+1
530 IF A(N)=A(N+1) AND ZEROC<>1 THEN
    V(1+UM)=V(1+UM)+1 LET W(1+UM)=A(N)
    NEXT N
531 IF A(N)=A(N+1) AND ZEROC<>1 THEN
    GOTO 560
540 LET UM=UM+1
550 NEXT N
560 FOR X=1 TO NUMDAIT
570 FOR Y=1 TO NUMDAIT-1
580 IF V(Y)<V(Y+1) THEN GOSUB 940
590 NEXT Y
600 NEXT X
610 REM VARIANCES, SD'S, MEAN DEVS FROM
    MEAN & MEDIAN
620 DEF FN T (T)=T*T
630 LET VAR=0 LET ME=0 LET M5=0
640 FOR N=1 TO NUMDAIT
650 LET T1=ABS(A(N)-MN) LET ME=ME+T1
660 LET T2=ABS(A(N)-MD) LET M5=M5+T2
670 LET T=(A(N)-MN)
680 LET VAR=VAR+FN T (T)
690 NEXT N
700 LET ME=ME/NUMDAIT LET M5=M5/NUMDAIT
710 LET VP=VAR/NUMDAIT LET VS=VAR/
    (NUMDAIT-1) LET PSD=SQR(VP)
711 LET SAMPSD=SQR(VS)
720 REM PRINTOUT
730 PRINT"J"
740 PRINT"NO. OF DATA ITEMS",TAB(19),
    "=",TAB(22),NUMDAIT
742 PRINT"SUM",TAB(19),"=",TAB(22),TAL
743 PRINT"LARGEST" TAB(19),"=",TAB(22),MAX
```

```
744 PRINT"SMALLEST",TAB(19),"=";TAB(22);MIN
745 PRINT"RANGE",TAB(19),"=",TAB(22),RANGE
750 PRINT"MEAN",TAB(19);"=",TAB(22),MN
760 PRINT"MEDIAN";TAB(19),"=",TAB(22),MD
765 LET TA=22
767 IF N=2 THEN PRINT"MODE",TAB(19),"=",
    TAB(22),MODE GOTO 790
770 PRINT"MODE",TAB(19),"=",TAB(22),W(1)
    , LET TA=TA+LEN (STR$ (W(1)))+1
772 IF TA=30 THEN PRINT TAB(22),:
    LET TA=22
773 FOR N=2 TO NUMDAIT
774 IF V(N)=V(1) THEN PRINT",",W(N),
    LET TA=TA+1+LEN (STR$ (W(N)))
776 IF TA=32 THEN PRINT TAB(22);
    LET TA=22
778 NEXT N
780 PRINT
790 PRINT"MEAN DEVIATION"
791 PPINT TAB(4),"FROM MEAN",TAB(19);"=",
    TAB(22),ME
792 PRINT"MEAN DEVIATION"
793 PRINT TAB(4),"FROM MEDIAN",TAB(19),
    "=",TAB(22),M5
800 PRINT"POPULATION STANDARD"
801 PRINT TAB(4),"DEVIATION",TAB(19),
    "=",TAB(22),PSD
802 PRINT"SAMPLE STANDARD"
803 PRINT TAB(4),"DEVIATION",TAB(19),
    "=",TAB(22);SAMPSD
804 PRINT"POPULAT. VARIANCE";TAB(19),
    "=",TAB(22),VP
805 PRINT"SAMPLE VARIANCE",TAB(19),
    "=",TAB(22),VS
820 PRINT"(PRESS ""L"" TO GET AN
    ORDERED LIST OF"
821 PRINT"DATA ITEMS OR PRESS ANY
    OTHER KEY TO"
822 PRINT"CONTINUE)"
830 GET T$ IF T$="" THEN GOTO 830
840 IF T$<>"L" THEN GOTO 890
850 PRINT"J"
860 FOR N=1 TO NUMDAIT PRINTA(N), NEXT N
880 PRINT"[illegible]" PRINT"PRESS
    ""1"" TO SEE PREVIOUSLY"
881 PRINT"DISPLAYED DATA OR PRESS
    ANY OTHER "
882 PRINT"KEY TO CONTINUE"
883 GET Z$ IF Z$="" THEN GOTO 883
884 IF Z$="1" THEN GOTO 720
890 PRINT"J" CLR
900 PRINT"[illegible]" PRINT"DO
    YOU WANT TO RUN PROGRAM AGAIN(Y/N)?'
910 GET Y$ IF Y$="" THEN GOTO 910
920 IF Y$<>"Y" THEN PRINT"J" END
930 CLR PPINT"J" GOTO 110
940 LET S=V(Y) LET U=W(Y)
950 LET V(Y)=V(Y+1) LET W(Y)=W(Y+19)
960 LET V(Y+1)=S LET W(Y+1)=U
970 RETURN
```

# As time goes by . . .

*Keep track of those long hours at the keyboard with this interrupt driven clock by* ***S Potter***

This program is an RSX or Residential System Extension program which means its operation is controlled by real commands, not calls or pokes

Locomotive Basic allows the machine code programmer to assign new keywords to the operating system and the system accepts them as it would normal keywords such as, *Print* etc It is the programmer's job define the keywords and point them in the general direction of the routine they should control. These new keywords are preceded by the symbol "'", (found by *Shift/@*)

The program is the Real Time Digital Alarm Clock for the Amstrad CPC 464/664 and is written as an RSX to allow ease of use

The Amstrad has no fewer than four different types of interrupt easily accessible to the programmer, not counting the Basic *Every/After* interrupts which unfortunately are at a lower level of priority and suffer delays to *Input* etc

This program uses the *Ticker* interrupt which is a 50th second interrupt and uses a count of 50 thus the program is accessed once every second Consult the Concise Firmware Manual for more details on RSX and interrupts

Type in the Basic loader, remembering to save the program before calling the program Normally the start address is *40000* and is 500 bytes long so save the program by *Save "title",b,40000,500,40000*

With the Basic listing you will find odd line numbers, these are to coincide with the start address of the eight bytes of data on that line, the last number is the checksum of that line To make typing easy use type in direct mode *Auto 40000,8* to generate the line numbers. Any errors will report the line number where the error occurred After running the Basic program with no error reports, Save the code as above and *Call 40000*

The commands for the clock are *Clockon,hour,minute,second* to display the clock and set the time The parameters are optional when just redisplaying the clock, and the seconds are also optional

*Clockoff* to hide the clock display

*Alarmon,hours,minutes* to set the alarm time and counting

:*Alarmoff* is entered to switch it off.

*Clockadj,n* is used to adjust the clock timekeeping The correct figure is 50 but may be altered to adjust the timekeeping in 50ths of a second fast or slow Note the parameter is not checked so keep within 40-60 or the clock may stop or the computer is interrupted so often that it never returns control.

The program is located at 40000 to allow room for a *Symbol After 0* and *DDI 1* disc drive if installed, when *Himem* is 40699, but may be relocated with an assembler to *500* bytes below *Himem* as required It also uses all standard firmware calls and functions so memory area permitting will operate with most programs.

Finally, the clock is displayed in *Window 7* so redefining *Window 7* will allow the clock to be displayed anywhere on screen.

```
10 REM *** (c) 1985 S.POTTER ***
20 REM *** LOUD AND SOFTWARE ***
30 MODE 1:PEN 1:MEMORY 39999
40 PRINT" Please Wait - poking..."
50 FOR I= 40000 TO 40500 STEP 8
60 READ ADDR
70 FOR S=0 TO 7:READ DAT
80 SUM=SUM+DAT:POKE ADDR+S,DAT:NEXT
90 READ CKSUM:IF CKSUM<>SUM THEN GOTO 150
100 SUM=0:NEXT:PRINT"DATA CORRECT":MODE 2
110 PRINT:PRINT"Type CALL 40000 [enter] to initiate"
120 PRINT:PRINT"Type 'CLOCKON,[ hour ,minute,[second]]":PRINT"no parameters t
o display clock":PRINT"hours,minutes, optional seconds to reset time and disp
lay clock":PRINT"     |CLOCKOFF to hide clock display (still working )"
130 PRINT:PRINT"     |ALARMON,[hours,minutes] to switch alarm on and set time
 for alarm ":PRINT"     |ALARMOFF to switch alarm off":PRINT"Press CTRL (P) t
o stop the noise"
140 END
150 PRINT "ERROR IN LINE - ";ADDR:STOP
40000 DATA 40000 , 67 , 201 , 50 , 84 , 156 , 175 , 50 , 0 , 750
40008 DATA 40008 , 130 , 50 , 205 , 157 , 50 , 254 , 157 , 62 , 1143
40016 DATA 40016 , 15 , 33 , 20 , 158 , 205 , 192 , 188 , 1 , 617
40024 DATA 40024 , 122 , 156 , 33 , 230 , 157 , 205 , 209 , 188 , 1320
40032 DATA 40032 , 33 , 243 , 157 , 6 , 129 , 14 , 0 , 17 , 599
40040 DATA 40040 , 170 , 156 , 205 , 239 , 188 , 33 , 237 , 157 , 1393
40048 DATA 40048 , 17 , 50 , 0 , 1 , 20 , 0 , 202 , 233 , 556
40056 DATA 40056 , 180 , 201 , 130 , 156 , 195 , 74 , 157 , 195 , 1305
40064 DATA 40064 , 63 , 157 , 195 , 123 , 157 , 195 , 120 , 157 , 1185
40072 DATA 40072 , 195 , 213 , 157 , 67 , 76 , 79 , 67 , 75 , 927
40080 DATA 40080 , 79 , 208 , 67 , 76 , 79 , 67 , 75 , 79 , 728
40088 DATA 40088 , 70 , 198 , 65 , 76 , 65 , 82 , 77 , 79 , 712
40096 DATA 40096 , 203 , 65 , 76 , 65 , 82 , 77 , 79 , 20 , 720
40104 DATA 40104 , 198 , 67 , 76 , 79 , 67 , 75 , 00 , 68 , 695
40112 DATA 40112 , 202 , 0 , 243 , 33 , 254 , 157 , 17 , 5 , 911
40120 DATA 40120 , 120 , 6 , 3 , 57 , 26 , 190 , 60 , 5 , 480
40128 DATA 40128 , 58 , 0 , 30 , 82 , 43 , 19 , 35 , 16 , 254
40136 DATA 40136 , 243 , 205 , 28 , 157 , 205 , 209 , 156 , 251 , 1457
40144 DATA 40144 , 201 , 58 , 3 , 158 , 254 , 0 , 200 , 62 , 956
40152 DATA 40152 , 7 , 205 , 180 , 107 , 50 , 9 , 158 , 62 , 350
40160 DATA 40160 , 50 , 205 , 90 , 187 , 30 , 0 , 120 , 205 , 933
40168 DATA 40168 , 7 , 157 , 62 , 50 , 205 , 90 , 187 , 58 , 824
40176 DATA 40176 , 229 , 157 , 205 , 7 , 157 , 62 , 58 , 205 , 1186
40184 DATA 40184 , 50 , 187 , 58 , 254 , 157 , 205 , 7 , 157 , 1115
40192 DATA 40192 , 20 , 9 , 150 , 205 , 180 , 187 , 201 , 18 , 1012
40200 DATA 40200 , 47 , 12 , 214 , 10 , 90 , 251 , 198 , 20 , 838
40208 DATA 40208 , 71 , 128 , 205 , 90 , 187 , 120 , 200 , 98 , 1099
40216 DATA 40216 , 187 , 201 , 58 , 4 , 120 , 254 , 0 , 205 , 1062
40224 DATA 40224 , 30 , 254 , 157 , 254 , 9 , 192 , 30 , 253 , 1228
40232 DATA 40232 , 157 , 71 , 20 , 2 , 150 , 184 , 192 , 20 , 790
40240 DATA 40240 , 0 , 120 , 71 , 30 , 1 , 150 , 184 , 192 , 822
40248 DATA 40248 , 33 , 10 , 120 , 205 , 170 , 190 , 201 , 243 , 1200
40256 DATA 40256 , 175 , 51 , 3 , 150 , 205 , 181 , 157 , 195 , 1124
40264 DATA 40264 , 207 , 156 , 243 , 254 , 0 , 40 , 58 , 254 , 1192
40272 DATA 40272 , 3 , 202 , 91 , 157 , 254 , 2 , 194 , 166 , 1069
40280 DATA 40280 , 157 , 24 , 10 , 221 , 128 , 0 , 20 , 254 , 803
40288 DATA 40288 , 137 , 221 , 30 , 221 , 35 , 221 , 126 , 9 , 1016
40296 DATA 40296 , 50 , 250 , 157 , 221 , 35 , 221 , 35 , 221 , 1195
40304 DATA 40304 , 120 , 0 , 50 , 9 , 158 , 62 , 7 , 50 , 453
40312 DATA 40312 , 3 , 158 , 205 , 90 , 187 , 195 , 207 , 156 , 1201
40320 DATA 40320 , 175 , 50 , 4 , 158 , 201 , 243 , 254 , 8 , 1093
40328 DATA 40328 , 40 , 17 , 254 , 2 , 194 , 166 , 157 , 221 , 1051
40336 DATA 40336 , 126 , 2 , 50 , 1 , 158 , 221 , 126 , 0 , 684
40344 DATA 40344 , 20 , 2 , 158 , 62 , 7 , 50 , 4 , 158 , 491
40352 DATA 40352 , 205 , 90 , 187 , 195 , 207 , 156 , 33 , 20 , 1101
40360 DATA 40360 , 158 , 126 , 35 , 205 , 90 , 187 , 254 , 10 , 1080
40368 DATA 40368 , 32 , 247 , 195 , 207 , 156 , 62 , 7 , 205 , 1111
40376 DATA 40376 , 100 , 187 , 30 , 9 , 158 , 62 , 30 , 200 , 801
40384 DATA 40384 , 90 , 187 , 33 , 42 , 158 , 126 , 35 , 205 , 876
40392 DATA 40392 , 90 , 187 , 254 , 10 , 32 , 247 , 30 , 9 , 807
40400 DATA 40400 , 158 , 205 , 190 , 187 , 201 , 243 , 254 , 1 , 1429
40408 DATA 40408 , 194 , 166 , 157 , 33 , 237 , 157 , 221 , 126 , 1291
40416 DATA 40416 , 9 , 95 , 22 , 6 , 79 , 6 , 0 , 205 , 807
40424 DATA 40424 , 233 , 188 , 195 , 207 , 156 , 0 , 0 , 0 , 979
40432 DATA 40432 , 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
40440 DATA 40440 , 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0
40448 DATA 40448 , 0 , 0 , 0 , 0 , 0 , 59 , 29 , 23 , 141
40456 DATA 40456 , 0 , 0 , 7 , 0 , 15 , 60 , 0 , 0 , 82
40464 DATA 40464 , 15 , 0 , 0 , 0 , 150 , 10 , 5 , 1 , 169
40472 DATA 40472 , 10 , 251 , 1 , 0 , 13 , 66 , 97 , 100 , 538
40480 DATA 40480 , 32 , 67 , 111 , 109 , 100 , 97 , 110 , 100 , 735
40488 DATA 40488 , 13 , 10 , 32 , 32 , 52 , 32 , 32 , 32 , 215
40496 DATA 40496 , 32 , 32 , 10 , 0 , 0 , 0 , 0 , 0 , 76
```

```
        org  #4000
        ent  $
entry   ld   a,#c9
        ld   (entry),a            ; stop re initilise
        xor  a                    ; reset time
        ld   (hour),a
        ld   (min),a
        ld   (sec),a
        ld   a,15
        ld   hl,ent
        call #bcbf                ; init tone envelope
;
        ld   bc,comtab            ; address of routine table
        ld   hl,wkspc             ; address of workspace
        call #bcd1                ; init new commands
;
event   ld   hl,tikblk+6          ; address of workspace
        ld   b,129                ; event class
        ld   c,0                  ; rom select
        ld   de,clock             ;  address of interupt routine
        call #bcef                ; init event
;
addtk   ld   hl,tikblk            ; address of workspace
        ld   de,50
        ld   bc,50
        call #bce9                ; add to interupt path
        ret
;
comtab: defw names                ; rsx routines
        jp   ckon
        jp   ckoff
        jp   alon
        jp   aloff
        jp   adj
;
names   defm "CLOCKO"             ; command name table
        defb "N"+#80
        defm "CLOCKOF"
        defb "F"+#80
        defm "ALARMO"
        defb "N"+#80
        defm "ALARMOF"
        defb "F"+#80
        defm "CLOCKAD"
        defb "J"+#80
        defb 0
;
clock:  equ  $                    ; interupt driven routine
        di
        ld   hl,sec
        ld   de,consts
        ld   b,#03
        inc  (hl)
counta: ld   a,(de)
        cp   (hl)
        jr   nc,countb
        ld   (hl),00
        inc  hl
        inc  (hl)
        dec  hl
countb: inc  de
        inc  hl
        djnz counta               ; increment variables
        call atest                ; test for alarm
        call print                ; and print them
finish: ei                        ; back to whence we came
        ret
;
print:  equ  $
        ld   a,(toggle)
        cp   0                    ; is clock on?
        ret  z                    ; return if not
        ld   a,7
        call #bbb4                ; swap text streams
        ld   (stream),a           ; save old stream
        ld   a,30
        call #bb5a
;
        ld   a,(hour)
        call decimal              ; print in decimal
        ld   a,03a
        call #bb5a
        ld   a,(min)
        call decimal
        ld   a,03a
        call #bb5a
        ld   a,(sec)
        call decimal
;
        ld   a,(stream)
        call #bbb4                ; return text stream
        ret
;
decima: ld   c,47
split:  inc  c
        sub  10
        jr   nc,split
        add  a,58
        ld   b,a
        ld   a,c
        call #bb5a
        ld   a,b
        call #bb5a
        ret
;
atest:  ld   a,(atoggle)          ; is alarm on ?
        cp   0
        ret  z                    ; return if not
        ld   a,(sec)
        cp   0
        ret  nz
        ld   a,(min)
        ld   b,a
        ld   a,(amin)
        cp   b
        ret  nz
        ld   a,(hour)
        ld   b,a
        ld   a,(ahour)
        cp   b
        ret  nz
sound   ld   hl,vouow             ; sound alarm!!
        call #bcaa
        ret
;
ckoff   di
        xor  a                    ; switch clock off
        ld   (toggle),a
        call blank
        jp   finish
;
ckon    di                        ; time set + on
        cp   0
        jr   z,con
        cp   3
        jp   z,setsec
        cp   2
        jp   nz,error             ; syntax error
        jr   sethm
setsec  ld   a,(ix)
        ld   (sec),a
        inc  ix
        inc  ix
sethm   ld   a,(ix)
        ld   (min),a
        inc  ix
        inc  ix
        ld   a,(ix)
        ld   (hour),a
con:    ld   a,7
        ld   (toggle),a
        call #bb5a                ; beep and switch on
        jp   finish
;
aloff:  xor  a                    ; switch alarm off
        ld   (atoggle),a
        ret
;
alon:   di                        ; alarm time set
        cp   0
        jr   z,aon
        cp   2
        jp   nz,error             ; syntax error
        ld   a,(ix+2)             ; set the alarm time
        ld   (ahour),a
        ld   a,(ix+0)
        ld   (amin),a
aon     ld   a,7
        ld   (atoggle),a
        call #bb5a                ; beep and switch on
        jp   finish
;
error   ld   hl,message           ; print syntax error
erprin: ld   a,(hl)
        inc  hl
        call #bb5a
        cp   10
        jr   nz,erprint
        jp   finish

blank   ld   a,7                  ; swap streams
        call #bbb4
        ld   (stream),a
        ld   a,30
        call #bb5a
        ld   hl,space
blprin  ld   a,(hl)               ; blank out last clock
        inc  hl
        call #bb5a
        cp   10
        jr   nz,blprint
        ld   a,(stream)
        call #bbb4                ; swap streams
        ret
;
adj     di                        ; adjust timekeeping
        cp   1
        jp   nz,error
        ld   hl,tikblk
        ld   a,(ix+0)
        ld   e,a
        ld   d,0
        ld   c,a
        ld   b,0
        call #bce9                ; reinit new interupt
        jp   finish
;
tikblk  defs 13                   ; space for interupt block
wkspc   defs 4                    ; space for rsx block
sec     defb 0                    ; time variables
min     defb 0
hour:   defb 0
ahour   defb 0
amin:   defb 0
toggle  defb 0                    ; on/off switches
atoggl  defb 0
consts  defb 03b                  ; time max values
        defb 03b
        defb 017
        defb 0
stream  defb 0                    ; text stream
vouow   defb 07                   ; sound command
        defb 0
        defb 15
        defb 00
        defb 0
        defb 0f
        defb 100
        defb 0
ent     defb 130                  ; tone envelope
        defb 10
        defb 5
        defb 1
        defb 10
        defb -6
        defb 1
        defb 0
messag: defb 12                   ; syntax error message
        defm "Bad Command"
        defb 13,10
space   defm "        "
        defb 10
```

# Open Forum

We are always actively seeking programs for publication – either for Open Forum, the machine pages or Star Game. When sending in a program for consideration, a clear program listing should be sent, together with, wherever possible, a saved copy on cassette. Documentation – usually not more than 1000 words – should start with a general description of the program, what it does, and then some detail of how the program itself is constructed. We pay very competitive rates, according to the length and nature of the program and the quality of the accompanying documentation.

## Phase Angles

### on Spectrum

The phase angle θ by which an alternating voltage or current leads or lags a reference axis needs to be known in many electrical circuits and networks. It can be calculated from the two rectangular alternating components, in-phase ('real') and in quadrature ('imaginary').

**Program Notes**

**Line 40** – *Prints* the column headings.

**Lines 50 & 60** – Invite you to enter the (signed) components and PRINT these figures in the relevant columns.

**Line 70** – Deals with the special case of p=0, where θ= ±π/2 radians (90°), according to the sign of q.

**Line 80** – Calculates for all other cases, the 1st (0°/90°) or 4th (0°/–90°) quadrant values of θ, as relevant to the signs of p and q, from the standard arc tan formula. This will also be the final value if p is +ve and q is *either* +ve or –ve.

**Line 90** – Adds π radians (180°) to the apparent 4th quadrant result when p is –ve and q is +ve to give the true 2nd quadrant value of θ (+90°/+180°).

**Line 100** – Subtracts π radians (180°) from the apparent 1st quadrant result when *both* p and q are –ve, to give the true 3rd quadrant value of θ (–90°/–180°).

**Line 110** – Converts θ from radians to degrees and *Prints* it in the proper column.

**Line 120** – Offers you the opportunity of entering another line of data, or of breaking out of the program, eg when having made a mistake in the entry, or in preparing a set of figures for a print-out.

**Line 130** – Protects against a wrong number entry.

**Line 140** – Invites another entry.

**Line 150** – Breaks out of the program.

```
10 PRINT "        4-QUADRANT ARC-TAN"
20 PRINT "        © J C Finlay 1984"
30 PRINT
40 PRINT "In-phase";TAB 11;"Quadrature",TAB 22,"Phi(deg)"
50 INPUT "Enter in-phase component",p: PRINT p,
60 INPUT "Enter quadrature component",q: PRINT TAB 11;q;
70 IF p=0 THEN LET phi=PI/2*SGN q
80 IF p<>0 THEN LET phi=ATN (q/p)
90 IF p<0 AND q>=0 THEN LET phi=phi+PI
100 IF p<0 AND q<0 THEN LET phi=phi-PI
110 PRINT TAB 22;phi*180/PI
120 INPUT "Enter 9 to CONTINUE, 10 to STOP",c
130 IF c<>9 AND c<>10 THEN GO TO 120
140 IF c=9 THEN GO TO 50
150 IF c=10 THEN STOP
```

# The Music Box

## Legendery name

The name of Robert Moog is almost legendary in the brief history of electronic music. Moog's work on sound synthesis in the early 60s was central to the development of early analogue synthesisers. He exploited the low noise and high stability of silicon transistors to create circuits whose frequency response and gain were smoothly and reliably determined by a control voltage. This meant that the output of one such voltage controlled circuit could be used as a signal or a control input into another such circuit. Two or more oscillators and amplifiers (VCOs and VCAs) could thus be 'patched' together in a variety of ways to produce complex tones.

By the late 60s, Moog's name – usually mispronounced (it rhymes with 'vogue') – was virtually synonymous with the newest and most exciting development in music of the period. Sadly, his career went into decline from that point. The Moog synth company was taken over and its founder treated – in his own words – as 'window dressing'. The rock lifestyle to which he contributed so much seemed to have claimed another victim.

Recently, Moog has resurfaced – as the chief scientist with Kurzweil Music, who produce the $11,000 Kurzweil 250 keyboard. The 250, says Ray Kurzweil of Kurzweil Music, will destroy the market for acoustic pianos because its 'sound modelling' technique is so uncannily accurate. Reluctant to give away trade secrets, Kurzweil suggests only that the 250 uses a combination of digital sound sampling and pre-programmed algorithms to produce what many listeners say is the closest sound yet to that of a real piano.

Kurzweil's reputation, however, is built on his entrepreneurial talent rather than his technical innovation or foresight. Detractors can't forget that, in the late 70s, Kurzweil's previous company, Kurzweil Computer, brought its founder considerable fortune (estimated at $6m) by an apparently devious ploy. Having introduced a range of optical character readers which could convert writing into speech for rapid data entry or as an aid to the visually handicapped, Kurzweil sold his company to Xerox. It is said that he convinced Xerox that OCRs were about to become as common as photocopiers, just as he now claims that the 250 will replace the piano.

Whether the 250 will live up to this promise remains to be seen. Xerox, to be sure, have lost money on their range of OCRs. Cheaper versions of the 250 are on their way, says Kurzweil, but the competition is tough and, according to some, the 250 is far from perfect.

The saddest thing in all this evident hype is Moog's part. "The Kurzweil people understand my capabilities," says the great man, "and they're using them." But he played no role in the basic design of the 250 and was only brought in as a sort of acoustic arbitrator. His main contribution, according to Kurzweil, was "to settle our endless debates about whether we had gotten a sound right". Right sound or wrong sound, it all sounds fishy to me. If you want further details, however, you could contact Kurzweil Music Systems, Waltham, Mass., USA.

**Gary Herman**

The Music Box is a weekly column with news, reviews and readers comments on all aspects of micros and music.

Any readers with experience of computer music making or companies with new product news are invited to write or drop a line explaining what they're doing to Gary Herman, The Music Box, 12-13 Little Newport Street, London WC2R 3LD.

## Alien 8

Some people are still having trouble with the *Knightlore* turbo loader routine and at the time of writing I'm not sure whether it's due to a printing error or whether it's because of certain peripherals. I should be coming up with a reliable routine next week.

However, this week I'm going to concentrate on *Alien 8*. I've withheld the infinite lives poke until we had an absolutely reliable way of getting past the loader. Lately I've been waking up in a cold sweat after nightmares about being chased by a giant drooling Speedlock, so it seemed like a good idea to try and sort it out once and for all. I've asked a talented hacker called Chris Allen to talk us through the way that Speedlock works.

It is probably without doubt the evilest of the Spectrum turbo loaders. It has hidden messages in the code such as, "Speedlock will damage your sanity," and the less prosaic, "bug off", for hackers. At the heart of it is, of course, the fast loader that makes it impossible to load the main block of the game if the loader is bypassed, but this is hidden by several layers of protection.

The principal problem is to stop the security loader from auto running. With normal games the simple solution is to *'merge'* the header rather than *'load'* it. However, it is possible to cause the machine to crash following a merge simply by poking illegal numbers into the memory where the Basic program lines are held - for example, removing the *'end of line'* character, or by creating an illegal line length. Because of the way that *'merge'* is designed to add two Basic programs together, the computer has to do a lot more checking of the code, line numbers etc than it does when *loading*.

The best solution is to use a new routine to create a new header that can be used to replace that on the original tape, but will not auto-run. This allows the turbo routine to be *'loaded'* followed by a return to Basic. The following is a short program that will create a new header

```
10 FOR T=0 to 28 READ A
20 POKE (23296+T),A NEXT
T
30 RANDOMISE USR 23296
40 DATA 221,33,12,91,17,17,
   0,175,205 194,4,201
50 DATA 0,67,74,39,115,32,
   80 82 79 71 32 141,05,
   200,200 36 4
```

Put a blank tape in, start it recording, then *Run* the above program. Reset the computer with *Randomise Usr 0*. Rewind the tape and load the new header. Now insert the game and wind it just past the first burst of noise (i.e. the header). Start it playing and it should soon stop with *'OK'* message.

For those that want to play the game you must type *Poke 24809 83:Poke 24810 76:Goto 0*. Restart the tape. Once the game has loaded you should see the Sinclair copyright message but as long as the border is black all is well. If the border is white there has been a loading error. If all is OK, then type *Poke 51736,0* for infinite lives or *Poke 42592 255* for (almost) infinite time. To start the game type *Randomise Usr 25344*. Alternatively you can hack around in the code – an assembler at location 56000 will not interfere with the *Alien 8* itself.

Anyone who wants to look into the way the turbo loader works will be in for a hard time. Not only has the essential code been hidden amongst a lot of 'illegal' Z80 opcodes but it has been *'XORed'* twice to make the code look like gibberish. To make it readable you have to work out the correct numbers by which to *'XOR'* it back again.

I'm going to stick with *Alien 8* for the rest of this week's column and first of all congratulations go out to J Anderson of Hounslow, Paul Marable of Dagenham, Jeremy Fisk of Bridgend, Bill Longley, Paul Olsen and Peter Kill of Colchester, Robert Daw of Bristol (who has also finished *Knight Lore* with 87%, and 32 days) and Andrew Wappat of Peterborough.

For those who are struggling here is a tip from J Anderson "If you can't see the way up to an object don't despair – there may be a hidden stairway. Some rooms may have hidden objects but only two objects can be left in a room at any one time so if you can't drop more than one then you know there is something hidden."

Finally some help from Adrian Gurney, but you will need to refer to our map. "If an object is dropped in a room where there is the correct socket for it it will home in on it. This can be very useful or very bad. In room E8 the remote controlled droid is hidden in the middle of the stack one block down. Jump on nearby blocks or a valve to jump onto the blocks around it, which then disappear. The arrow blocks are at the bottom of the stack.

"At A11, push the blocks to where the socket is and move each layer slightly to make a staircase. You need an object to stand on as well. K11 – make the blocks around the flashing socket disappear by stepping on them – push the block over the socket out of the way. F15 – a very nasty room. When you enter, turn left or right and walk as far as you can. When the monster gets quite close, turn 180 degrees and walk into the other wall then walk along the wall to escape. H12 – jump onto nearest block and it will disappear, get clear and the robot will trap itself in the corner. Climb over the opposite end to get to the valve. C8 – climb steps and jump onto the big pile. D16 – to save time jump off the steps to get to the door near left. F9 – push the object off the block before picking it up to avoid the shells. F5 – carefully jump onto the moving platforms to get to the opposite side. E6 – jump onto the platform and onto the object.

"G2 – use the blocks to get to the higher exit. In E4 the block at the bottom of the big platform rises if you jump on it. In C4 the blocks on the far wall rise if you drop an object, walk a couple of paces onto the block and pick up the valve – the platform will rise allowing you to clear the pyramids.

"A6 – the object can be collected by standing half on the block, dropping a valve, jumping from valve to the platform and then to the top. In I8 there is a hidden valve at the bottom of the disappearing blocks. Be careful not to leave an object in a position usually occupied by a block when you leave the screen – it will be 'crushed' and disappear when you return.

**Tony Kendle**

### We are searching for the top UK computer games player – the best there is!

The very best of Britain's game players will get to fight it out on a number of top secret new games – scheduled for release in the autumn.

**Here's how it works**

Study the table below and look at the column for the machine you have – these are the games you'll need to master. Send your high scores in on the form below, making sure that your scores are authenticated by a responsible individual signing the form. Any score achieved using technical short-cuts – such as infinite lives Pokes – will not be accepted.

Between now and September Tony Kendle will be keeping you up to date on the *Arcade Avenue* page with just who has the scores to beat. Then, in September the top three scorers on each machine will battle it out for a place in the final and the chance to be the first to play our top secret games.

| | Commodore | BBC | Spectrum | Amstrad |
|---|---|---|---|---|
| Game 1 | Suicide Express | Elite | Technician Ted | Sorcery |
| Game 2 | Beach Head | Jet Pac | 3D Star Strike | Splat! |
| Game 3 | Shoot the Rapids | Chuckie Egg | Cyclone | Manic Miner |

*Game Wizard Entry Form*

Micro

Game 1 score

Game 2 score.

Game 3 score.

Name

Address

Your signature

Witness's signature



# Addictive puzzle

At three o'clock this morning, well on his way to rescuing the Crown from the Serpents, poor old Grand Elf finally succumbed to the combined attack of two skeletons and a 'norrible Ruster.

But don't worry – all this took place in a game *Out of the Shadows* from Mizar Computing. You will know by now that text adventures are my favourite pastime, but occasionally a graphic adventure comes along that grabs my fancy. I don't mean titles such as the series from Ultimate, or the hordes of platform games. Although I would agree that there is a large degree of puzzle-solving in these, in the end the score bears a direct relation to your reflexes. No, I am thinking now of those programs like *Telengard*, The *Ultima* series *Runes of Zendos* and *The Ring* series from Wintersoft.

Having seen *Out of the Shadows*, I am happy to say that here we have a good old knockabout which will please all those ex-D & D'ers who write to me, looking for a similar experience from their computers. I have to admit that there is rather more bash than puzzle in this one, but it is still addictive.

Play follows the usual pattern of these affairs – that is, you start off in your home, with but your hands or at best a lowly dagger about your person, and a measely two silver coins. Before being deposited in the adventure, you can choose your Race – Human, Elf (a noble calling!) or Dwarf, each of which has its own attributes. Somewhere nearby your humble abode is a merchant's dwelling.

However, nothing is achieved by sitting at home, even though it is nice and easy – sooner or later you will have to venture forth into the cold morning and face those nasty monsters. Although you haven't got a lot of cash at this point, you could do a lot worse than nipping quickly over to your next-door neighbour, the Merchant. Markers can come in very handy, and they are also the cheapest commodity, so you can pick up a couple of them to take along. Once you've built up some stocks of hard cash, you will be able to equip yourself with armour, spells and so on.

Command input is achieved with the keyboard, which, unless you're a touch typist, can be a little frustrating at times – reflexes are important in this game, although careful planning pays huge dividends. At the merchants, for example, you can find out how much each item is priced by typing *Cost*. Similarly, typing *List* will display a scrolling rundown on your status.

Many other commands are also available, such as *Open* (a box or casket, many of which are fortuitously left lying around), *Look* (in said box for its goodies) and *Torch* (on or off as necessary). To move, type *Go* and the direction – as with all the other commands, pressing *Enter* repeats the previous command, which makes things a little easier. Most of the other commands are concerned with combat, of which there is enough to please the most bloodthirsty player.

This is where the keyboard gets in the way a little – having to type in A(ttack) E(ast) each time you want your hero to bash a Monster can get a little hectic. And this assumes that you have picked the right weapon to use beforehand (forward planning, again).

So far, so much like many other programs – but why *Out of the Shadows*? Well, this is where a brilliant stroke of genius on the part of the programmers makes this particular game so addictive and worth playing: as you, the player, move your little man around the screen, so your point of view enlarges. Thus, when you are in a room, your field of vision is, realistically, a narrow cone spreading out from the door. Move towards the door, and the cone enlarges. In a corridor, the 'orrible 'aries waiting just around the next corner are hidden from view, and you will only see them as you step, quaking, around the corner.

Although the graphic window on the adventure is a small area in the top left of the screen (all the text concerning your actions, your status and the outcome of battles scrolls up the right hand side of the screen. below the window is the weapon currently prepared for use), this reinforces the effect of the shadows. As you move your character around the screen, so the scene gradually unfolds around you. The by-product of this is that the graphics are only character-square sized, so that your monitor has to be nice and sharp to get the full benefit.

While the initial exploration takes place on the surface of this world, the main playing area is below ground. There are lots of holes around, down which our hero can fall, to the accompaniment of Spectrum whistles. Make sure you have had the foresight to purchase a Torch!

With a fast Saving and Loading of characters, so that they can be nurtured from level to level, gaining in experience, riches and strength, *Out of the Shadows* is a totally absorbing game and one which is not going to be far from my Spectrum. Mizar Computing, 104 Bradwell Road, Bradville, Milton Keynes MK13 7DH, £7.75

The Quill has allowed anyone with a little imagination and a strong typing finger to indulge themselves and produce an adventure as good as any grand commercial effort. As you will know from reading this and other columns, Quill'd adventures are legion, but the ones that I most admire, and for which The Quill was surely meant, are those written by schoolkids in concerted effort. Allowing each member of the class to contribute his or her own idea of how the scenario should develop must be exciting for the kids, and, let me say very tentatively, of more value than a hundred so-called 'educational' programs.

The majority of these, I suppose, are never seen outside the confines of the school, but one that has come my way recently is from the Duncan Bowen Youth Wing of Ashford (Kent or Middlesex, I know not). It's a very funny escapade concerning the kidnapping of a school teacher, and, of course, being written by school kids, plenty of fun is had at the expense of teachers. As well as this, it's not a bad little adventure!

Anyone interested in hearing about any problems that arose during the writing of this adventure should ring Mr J Fanning, the co-ordinator, on Ashford 23804.

Now, before you do *anything* else, turn to the back page. What do you see? That's right – *not* Piman! Let's shed a small tear for his passing, for we shall not see his like again. I've never mentioned the cartoon (although *Pimania* of course has posed plenty of problems over the years – and where *is* the Golden Sundial?), but it has been a source of delight for a long long time.

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Remember – the system only works if those adventurers who have solved the puzzles get in touch. Every week is Save An Adventurer Today (SAAT) week!

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SINCLAIR QL software books for sale or swap Psion Chess Simulation Techniques Advanced Superbasic Programming and introduction to superbasic Nigel Kennett, springles Micklefield Lane Rawdon Leeds LS19 6BA Tel (0532) 504431

COMPUTER SYSTEMS Spectrum £350 Atari £170 ZX81 £65 Jupiter Ace £25 all complete and vgc. Ring (0723) 371086-8 pm (the Spectrum is a mega-Spectrum!)

SPECTRUM 48K + Kempston joystick only 6 months old + some software £100 Tel (01) 805 3326 evenings

48K SPECTRUM! ! ! fuller keyboard mi cro tube ! ! two Atari joysticks Vurrall speech & alot quality Smithe recorder interactive cartridges + collection of more than 75 original classic games Tel 01 383 3909

SPECTRUM 48K Kempston joystick + interface fuller keyboard 60 original Knight Lore Underwurlde Gift from the Gods etc. Worth £550 sell for £275 ono preferably in London area Call 727 1089 Kareem

SPECTRUM 48K In sale also Ram Turbo Interface two joysticks more than 40 original games inc Matchday Skooldaze Booty Life of Wally etc All for £260 Tel Montrose (0674) 72207

SPECTRUM light pen new £10 also Spectrum centronics interface £25 Basildon (0268) 417881 after 6pm

SPECTRUM 48K Issue 3 tape recorder joystick, protex interface mags 90+ games all vgc £130 ono Tel Watford (0923) 43665

SPECTRUM 16K s/w £55. Tel 203 1577 MI I H II

## Wanted

WANTED Hunter K Ior (Protek) for my 48k Spectrum will swap Match Day (Ocean) Tel 001/086 3225 Torry

WANTED ZX81 16K ram and power pack etc Must be free or cheap Will take faulty rd packs free or cheap 0492 57723

WANTED Command modules for Texas 99 4A educational or games or any thing else any hardware/software considered depending on price e.g. physics/chemistry tester Tel Washington 4183910

WANTED Disk drive for Commodore 64 1541 model preferred I will pay £90 ono Accessories not necessary but would help Tel 021 777 5023

WANTED Spectrum Prolog offers White Lightning & utilities Wanted Printer Tel Hanworth 51321

WANTED CBM64 disk drive 1041 for exchange TI99/4A extended disk record keeping cartridge tape deck & leads Basic cartridge professional Medway 400692

WANTED crash issue one Will pay if in good condition Send to B Moore 23 Cromwell Road Croydon Surrey CR0 2JZ

WANTED three Spectrum owners to play and share cost of computer wargame "Empires" John McHugh 44 Hamur Road Penicuik Midlothian Tel Penicuik 77322.

NEED software for Spectrum 48K. Prefer purchase single source in good condition and very competitive price Pls include tand airmail charges Reply to Monthly Post Box 123 Sharerah Saudi Arabia

WANTED Acorn Atom disk controller drive etc Also looking for software books W Gerstner Anrweg 8 D-5305 Alfter West Germany

WANTED any computer cheap from Vic 20 to BBC Competitive prices paid. Tel 0422 822067 after 6pm

WANTED programmable robot for ZX Spectrum Will pay up to £30 Tel 01 954 8791

WANTED CBM64 £100 offered Deeside 813696

SWAP Oric 1 48K & recorder + £200 of original s/w manuals & mags for CBM64 & C2N Tel 01 778 4593 evens.

40 CHANNEL SM-C3 Radiomobile & Magmount, 2 mths old Cost £60 new Want computer anything considered Tel Dunbarton 61188 after 6pm

MODEM wanted Demon V or VTX 5000 Swap for my PT 20 Casio organ proper keys chords bass/beat accompaniment New from Xmas costs £60 swap or sell £41 ono Richard (01) 699 7093

SWAP BBC B + recorder + joysticks and £750 worth of software for CBM64 with disk drive C2N and some software or will sell the lot for £400 Phone 01-647 5069 after 6.30pm

SWAP 48K spec with lo profile keyboard ram turbo kempston books, mags £300 of software for Atari 800XL with disk or sell for £200 Phone (0422) 822067 after 6pm (Might pay diff)

WANTED Spectrum software based speech synthesiser Also may latest games for sale (0743) 63621 (Dave) after 6.30pm

WANTED Flight Path 737 to buy or borrow for the Amstrad CPC 464 Stan 583 8622

SWAP DK Tronic keyboard + interface two + Tranz Am game tapeloader for ZX or Alphcom printer Tel Bishop Auckland 730056 after 4.30pm weekdays

WANTED ZX81 ZX80 Jupiter Ace or Aquarius Must be boxed and working with software Pay up to £20 – depending on condition or swap for Co ection Teletx (tv tl TV sound) Tel 748 7325

SWAP Spectrum 48K for Unicom modem plus associated rom and disk (for BBC) If needed will throw in joystick plus interface and software Tel Chirk (0691) 772238

WANTED Sinclair Vu-lite program for 48K Spectrum Tel Derek on Reading 697181 after 5.30pm

WANTED BBC B games on disk 40 TR advertiser 302 Langland Road Netherfield Milton Keynes MK6 4HY

1541 Disk drive wanted for Com 64 will pay cash or p/x Spectrum 48K + cash Telephone Haydn Barker (0709) 813042 weekends only

WANTED Commodore 64 disk drive with or without software Must be in working order and reasonably cheap Ring Haydn on Rotherham 813842

SWAP Quickshot joystick and Kempston type interface for ZX printer with paper Write to John Allison 119 Dovecot St, Stockton Cleveland TS18 1HG

HELP! I like to be a member of colour Genie user club especially one with news letter and technical advice

SWAP Commodore 64 American model for similar English computer Write Mike Watson 4 Lovaine Ave North Shields Tyne and Wear NE29 0RX

SWAP TI99/4A with extended basic module mags books for reel to reel tape recorder Tel Brian 03827 2096 anytime

WANTED Vic 20 with at least one cartridge must be in perfect condition will pay up to £25 Tel (0865) 711584

WANTED Computer will swap 10 geared drop handle No Sinclair products Must be in Oldham area. Tel Tony on 061 620 7368

SWAP Sharp MZ700 (64K) Built in data recorder 27 game cassettes owners manual etc for CBM64 with C2N recorder or sell for £230 ono

SWAP Hornby Zero 1 train control system worth £90 for disk drive printer or modem for Commodore 64 Write to Simon 16 Highfields Hoylandswaine Sheffield S30 7JP or Tel Barnsley 762340

WANTED good pools/racehorse predictor also astrology biorhythm or other utility programs Swap for new utility and games programs Tel (Tamworth) 51321

WANTED Epson RX80FT or FX80 Exchange for Epson TX80 plus cash or sell for £95 Tel Amesbury 24346

SWAP BBC B s/w + cassette player for CBM 64 + disk drive or sell £225 Under guarantee Tel 01 582 4688 after 6pm

SWAP brand new CBM Plus 4 and tape recorder for CBM64 under 6 months old and in good condition or sell £148 Tel Watton (Norfolk) 882055

WANTED printer plotter for Dragon 32 Will pay up to £50 if in good condition Phone 0633 420619 with details

BUSINESS software wanted for CBM64 In particular Easy Stock Easy Spell utilities Write or phone prices etc to Dougherty 7 Albany Road Douglas I O M or Tel 0624 74421 evenings 6pm 8pm

COMMODORE 64 massive software clearout games utilities business s/w Also I would like a CBM Epson printer interface will swap any of above s/w Phone 01 748 8776 weekends All s/w original Many favourites

KOALA Pad & s w (disk) almost new Swap for CBM64 or Commodore hardware or s/2 (intelligent) or reasonable offer Tel (0248) 353346

SWAP Easyscript + future finance on disk for musicalc on disk Or sell £35 each Tel Nom 208108

WANTED colour monitor disk drive for Amstrad 464 Also Epson or compatible printer Tel Llangain 724636 after 7pm

2 TAMIYA electric off road racers chargers batteries + accessories get rol off road racer & spares Worth over £200 for th ec Swap for Sharp M280A or sim ar Tel 01-803 0756

PLUS 4 + 1541 disk drive C2N data recorder + joystick + some s/w Swap for BBC B + disk king systems Chelmsford (0245) 355280 Pru

WANTED extended basic for Texas TI99/4A must be under £50.50 Tel Llangain 724636.

Amstrad pen pal wanted I am 13 have colour CPC 464 DK Tronics speech synth joystick software etc Interests programming games etc Lee Barton 58 Halton Brow Runcorn Cheshire WA7

Rotronics Wafe drive and five cartridges else original s/w swap for Microdrives int 1 Currah m slot m/speech or offers Tel Abingdon 834613 eves weekends

Spectrum software for sale Devpac 3 and Abersoft Forth 01-850 3796 Mr A Foster

Has anyone got a map of Urban Upstart any help will be appreciated J Hafford 137 Sunderton Rd Kings Heath B'ham 14

Swap my 48K Spectrum and joystick and interface tv all games books and mags £30 Cahs for CBM 64 any condition of Electron or any computer 0438 68558 after 5pm

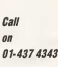
Swap Acorn Electron with £100 of s/w and books in excellent condition for Spectrum + or sell for £115 Tel Portsmouth (0705) 375858

Wanted Acorn Atom Disk Controller Drive etc New or used!!! W Gerstner Ahrweg 8 D 5305 Alfter West Germany

Wanted Chuckie Egg designer for use on Spectrum Tel 066641 374

Wanted 48K Spectrum owner (pref Inle King Crimson) to swap s w nsults etc Davies 3 High Street Drybrook Glos GL17 9EA (good at adventures? good girl Dulk instructions?perfect!) A Simmons 3 High Street Drybrook Glos GL17 9EA







**48K** Spectrum with tape recorder mags manuals & leads Swap for CBM64 tape recorder joyst ck Tel 01 348 1365

**WANTED** Visa write cartridges and manual for cash or lots of software Tel Milton Keynes 72721 or 70079 CBM 64!!

**Wanted** Sinclair I/F 1 and Microdrive in good working condition will pay £50 ono 0606 320728

**Swap** Casio MT82 poly synth for 48K Spectrum and peripherals Please ring and give details 0684 33083

**Wanted** Devpac Pascal Ultrakil for Spectrum Tel 031 337 1488

**Wanted** Spectrum 48K or Atari 400 48K plus tape deck Will pay up to £40 must be VGC Phone Wirral Merseyside 051 606 8184

**Swap** Centronic Wafadrive with word processor and blank Wafa for ZX expansion pack Alan Taylor 22 Meadow Lane Parr St Helens Merseyside WA9 3RF

**Wanted** very cheap for Spectrum m/drive plus I/face or exchange for Brother HR 5 plus I/face plus adaptor Mr Mayle Globe House Royal Lane Hillingdon Uxbridge

**Swap** 48K Spectrum DK Tronic k/board Brother HR 5 plus h/ware s/ware tots value £700 + for BBC B plus s/w Mr Mayle Globe House Royal Lane Hillingdon Uxbridge

**Wanted** Books etc on Sinclair Spectrum 48K also cheap printer for Spectrum 48K J Neill 15 Dalnottar Drive Old Kilpatrick Strathclyde G60 5JP

**Wanted** CBM/Pet 2000 3000 or 4000 series plus printers and/or disc drives if available Will consider faulty units Tel P Bookless 048525 3131 9 5 Mon/Fri Can collect

**Swap** ZX Spectrum I Alphacom 32 printer All boxes + tape recorder for Amstrad CPC 464 with green screen or colour or sell for £200

**Swap** Striker disc for 48K spectrum Tel 01 446 3836

## Commodores for Sale

**CBM64** C2N 2 joysticks P rogrammers Reference Guide 3c extended basic £100 of original s/w blank tapes magazines computer disks £250 Tel Crayford 56611 after 6pm

**ORIGINAL** s/w for CBM64 Simons Basic Future Finance Easy Script Programmes utilities lots of games on disks & cassettes All cheap Some unused & sealed Tel 021 384 2738

**CBM 64** approximately 100 original games cassettes £4 each or buy four and get one free Tel 01-458 2955 after 5pm

**VIC 20** 1 joystick 2 paddles 3 games Basic introduction to Basic 1 2 cassettes + book 16k expansion + cassette player £90 Tel 01-882 3622

**CBM 64** C20 cassette deck Simons Basic £150 worth of games 2 joysticks + books mags £240 Tel Michael 01 480 0053 after 4pm

**COMMODORE C16** starter pack + games ergo games pack £85 ZX81 + 16k + Flight Simulation game £25 18 colour TV £30 or £106 the lot Tel 01 942 1580 (evening)

**VIC 20** original adventure games £4 00 each or swap Tel Exeter (0392) 217322 any time

**COMMODORE 64** 1541 disk drive + 5 disks C2W recorder + 10 original games tapes Free delivery UK May split £290 ono All new Jan 85 Genuine reason for sale Tel 0204 47427

**VIC 20** 21K ram Spectre video joystick C2N cassette recorder £100 of original s/w 60 mags cartridge manuals excellent condition £99 Tel St Albans 57525

**CBM VIC 20** C2N data recorder + starter pack £40 ono Tel Wilmslow 531234

**CBM 64** C2N and joystick for sale with lots of latest software including Ghostbusters Raid Over Moscow and Spy vs Spy £280 Tel 01-878 6993

**Commodore 64** with C2N data recorder two joysticks over £50 worth software offers around £180 Contact Redditch 59075 after 5.30

**VIC 20** cartridge games Adventures GCE CSE revision packs Mastermind Sargon Chess etc £4 each or write first with offers Mr Taylor 5 Mitcham Rd Hull HU8 8RL

**CBM 64 SOFTWARE.** Staff of Karnath £5 Astro Chase Circus (Brian Howarth Graphic Adventure) £4 each or all three for £10 All in original boxes etc Tel 042878 2225 (after 6pm)

**VIC 20** complete starter pack 16K Switchable Ram pack Joystick and games £90 Tel 0708 540452

**CBM MPS 802-1526** Top of range CBM printer £345 sell for price of 801 only £190 ono Tel 01 995 8832 any time.

**CBM VIC 20 S/W** (6 Wunder Walter £4 Hunchback £3 Invaders £2.50 Grid Runner £4 (originals only) Tel Romsey 0487 812061 after 4pm

**COMMODORE 64** plus C2N cassette deck plus Quickshot 2 joystick plus 3 books plus £140 worth of software Titles include Ghostbusters and D T Decath lon Sell for £200 ono Tel Nottingham 869892 any time.

**16K VIC 20 - CASSETTE UNIT** Books and software incl Bewitched Jetpac and Gridrunner Two carts Joystick Stack Light Rifle Also Programmer s guide Sell for £96 ono Tel Reigate 21177 after 4 30pm

**CBM/PET COMPUTER** 32K dynamic Ram mach ne New Rom complete with C2N Datasette and software very good condition and perfect working order Accept £135 ono Tel 0244 676717

**COMMODORE 64** cassette deck 1520 printer/plotter manuals joystick £200 worth of software and magazines £280 Tel Reigate 13905 after 6pm

**CBM 64 DISC SOFTWARE SALE.** Infidel Tapper Frak Pole Position Buck Rogers Ghostbusters Zaxxon plus many more All converted spebo load Originality guaranteed all cheap Tel 0742 618838

**CBM 64,** C2N cassette recorder Simons Basic games mags audio £240 Tel 01 800 0053 after 7pm (S London area)

**VIC 20 18K** £150 worth of S/W joysticks manuals Basic Part I C2N cassette unit, or swap for Spectrum £100 Tel 0487 812061

**1530** C2N 22 2 unit for CBM 64 £25 CBM 64 original S/W Valhalla £8 circus £4 Hobbit £5 and others Vic 20 16K expansion n Grandmaster Chess £7 80 Spelling J (for ages 7-11yrs) £5 Tel Milton Keynes 584678

**VIC 20 - C2N RECORDER** Intro to Basic Chess cassette cartridges and books £59 Williams Tel 01-800 3868

**VIC 20 TAPE RECORDER C2N** Games and books all to £ 5 Tel Haysam 01 431 1790

**CBM 64** CN2 1541 Disc drive excellent condition with lots of software on disc and tape 2 joysticks books manuals mags Cost over £500 Nearly new sell for £420 ono Tel Bradford 639066 after 5pm

**CBM 64 SOFTWARE FOR SALE.** F15 Eagle Cadcam War of Imp Miss Ghostbusters Fighter Pilot Matchpoint Summer games Astro-Chase Beach head (all originals) and more Must sell Rob Tel 061 928 8354

**VIC 20 16K RAM** over £80 worth of software cassette recorder manuals and magazines Will swap for Spectrum or Spectrum plus with tapes Janus Wodrnski 10 Park Street Cowdenbeath Fife Scotland Tel 511649

**CBM 64 CASSETTE RECORDER** Two modems 1200/1200 1200/75 and 300/300 Baud RS232 interface joystick £50 worth of software Must go to good home £250 o n o Tel Cav 584017

**COMMODORE 64** Hardly used Still in box Plus C2N cassette recorder joystick software and magazines, £180 ono Tel 021 550 0673

**CBM 64 DISCS** Spy Hunter Shootemdash Raid over Moscow Epyx Jumpman Alligata Chartbuster Zoom 64 £7 each Tales of Arabian Nights £4 All £36 Contact Norman Parker Tel (037188) 498 after 8pm

**Commodore 16** starter pack with guarantee and 12" colour tv some software Best condition unwanted gift two months old £160 bargain price! For details phone 01 348 0508 after 4 30

**CBM 64** C2N + joystick + loads of top software + assembly tutor + b/w tv + over 200 mags cost well over £400 sell for £260 o v n o Tel Steve on Coventry (0203) 418808 after 5pm

**CBM 64** beginners assembly (honeyfold) 100 Page manual assembler Rom calls Never used £7 00 etc Forth 48K Spectrum with manuals Never had time to use £6 Tel 0922 52230 anytime

**VIC 20** for sale offer includes 16K switchable 8k C2N loads of software including Perils of Willy Pharoah s Curse & more £65 phone (0278) 74234 anytime



## ADVENTURE HELPLINE

**Espionage Island on ZX 81.** How do I get out of the plane? Andrew Newington 264 Queens Park Road Brighton, Sussex BN22 ZL

**Erik the Viking on Amstrad** How do I get into the long Bush? What can I do in the stone? Kevin Small 167 Alloway Drive, Kirkintilloch, Glasgow G66 2SB

**The Hulk on Spectrum.** How do I close the gas nozzle? What can I do against the egg? What can I do with the wax? Rene Van de Berg Zylembel 87 23 16 KR Leiden Holland

**Lords of Midnight on CBM 64.** Need a detailed map Will pay for postage Photocopying etc Steve 45 Wallgate Road Childwall Liverpool.

**Planet of Death on Spectrum.** How do I use the lift? What are the suitcases for? Kevin Birnie 4 Deans Road, Fortrose Rosshire Scotland IV10 8TS

**Emerald Isle on BBC B** I can t find the ornate key with which to open the gates Andrew Hunt 20 Reddick Drive Taverham Norwich NR8 6RA

**Catacombs on CBM64** I m stuck in the first cavern I ve tried everything! What shall I do? Neil Clarke 16a Elm Avenue New Milton Hampshire BH25 6HE

**Return to Eden on CBM 64.** How do you reach the wonder and not get thrown off the autoscythe? Martin Fovey 30 Vicar Road Wath, Nr Rotherham S Yorks

**Eureka on Spectrum** How do I get the Eagle and cure for Leprosy in Roman Italy? Will give help John Trusdale 28 Househillwood Cres Glasgow

**System 1500 on Commodore 64** What is the code for Mills and Dyson and for the Cilsey Data Company? Andrew Brown, 16 Stevenson Court Craigshill Livingstone West Lothian, EH54 5NW

**Various on Spectrum.** Help needed on Dungeon Adventure Golden Apple Urban Upstart Eye of Bain Valhalla Lords of Time and Adventure 200 Ashley Monk 118 Brighton Road, Southgate Crawley W Sussex

**Jewels of Babylon on Amstrad** Can row from boat to island, but cannot get any further than Beach E Rocks Ulvenhoutselaan 567 YB25 MB Breda Holland

**Tir Na Nog on Spectrum** How do I re-unite and activate the fragments of the Seal of Calum? Nigel Hill 19 Glancynon Terrace Abercaman Aberdare Mid-Glam, South Wales CF44 6RL

**Jewels of Babylon on Amstrad** How do I get past the cannibals? How do I get past the vertical slab of rock? R J Betteridge, 213 Marsland Road Sale Cheshire

**Message from Andromeda on Amstrad.** How do I progress beyond the Mirror Room? Patricia Dazeley 31 Vicarage Close Arlesey Bedfordshire

**Tir Na Nog on Spectrum** How to get the feather out of the Storm Cave? There is a Sidhe guard at all times Christine Foggin, 70 Clifton Terrace Whitley Bay Tyne and Wear

**Robe City on Spectrum.** Once landed how do I leave the ship? This is my first adventure and it is driving me mad! A D West 23 Lucy Close Stanway Colchester Essex.

**Spiderman on Spectrum.** How do you enter the strange cloud? How do you enter the mist below? Andrew Dalglish 44 The Avenue Starbeck Harrogate N Yorkshire

**Colossal Adventure on Spectrum.** How do I find the Pirate's Chest? David Bailey 106 Wake Green Road, Moseley Birmingham

**Inca Curse on Spectrum.** How do I put the fire out? What do I need in the Sand Dungeon? Gary Packard 81 Parkerin Cres Parkside Seaman, Co Durham SR7 7XA

**Twin Kingdom Valley on Electron.** How to get the Master key from Dragon or how to get anything from Witches? Simon Randell 48 Ashton Road, Blackpool Lancs.

**Various on Amstrad.** Help needed on Return to Eden Jewels of Babylon and Forest at Worlds End Stephen Miller Oakdene Old Station Road, Halesworth Suffolk, IP19 8JJ

**Espionage Island on Spectrum.** How do you drive the Tipper Truck and how do you get in the mine shaft? Mr M Martin 2 Bourne Approach Chelsfield, Orpington Kent

**Fantasia Diamond on Amstrad.** How do you get over the river? How do you get down the manhole? Michael Smith, 313 Green Lane Finham Coventry CV3 6EH

**Sphinx Adventure on Electron** Can not find boat Have cheese but cannot find mouse Simon Cocquel 3 Hallwicks Road Stopsley Luton Beds

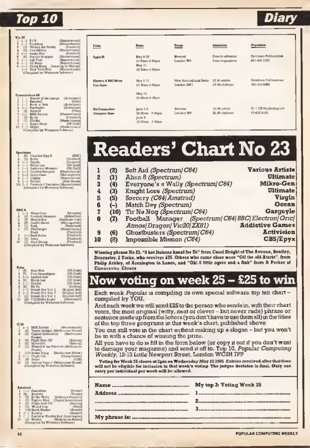
**Sherlock on Spectrum.** Where are Basil and Tricia s flats? Where is Portman St and the Opium Den? Andrew Bald, 15 Towersley Drive, Thame Oxon OX9 3NR.

**Twin Kingdom Valley on Spectrum.** How do you get the master key from the dragon? Andrew McNeill 191 Blackbrook Road Fareham Hants

**Castle of Terror on CBM 64.** How to kill the Colm – not just turn him into a Bat P F Arthur, 290 Baldwins Lane Croxley Green Herts

**System 1500 on Spectrum** What is the code for Midminster Bank Also A & Routledge and Co Jand Rich, Chavey Cottage Silver Street Congresbury Bristol BS19 5EY

**Aztec Tomb Adventure on CBM 64.** Having got sword Rope, Jam Jar Cloak etc, and having seen fish, how did you get to the forest and what plants need water? E Priest, 36 Derwent Avenue Rayleigh Essex SS6 8LE





## Vic 20

1 (—) R.I.P. (Mastertronic)
2 (—) Rockman (Mastertronic)
3 (1) Wacky the Bricky (Firebird)
4 (2) Doodlebug (Mastertronic)
5 (—) Snake Bite (Firebird)
6 (8) Psycho Shopper (Mastertronic)
7 (—) Sub Hunt (Mastertronic)
8 (—) 3D Bane (Mastertronic)
9 (—) Crazy Kong (Interceptor Micros)
[illegible] (—) New York Blitz (Mastertronic)
(Compiled by Websters Software)

## Commodore 64

1 (—) Master of the Lamps (Activision)
2 (—) Baseball (Elite)
3 (—) Rock n Bolt (Activision)
4 (—) Pastfinder (Activision)
5 (3) Airwolf (Elite)
6 (—) BMX Racers (Mastertronic)
7 (2) Booty (Firebird)
8 (1) Chiller (Mastertronic)
9 (—) Super Huey (US Gold)
10 (—) Kryjet (Mastertronic)
(Compiled by Websters Software)

## Spectrum

1 (6) Chuckie Egg 2 (A&F)
2 (7) Booty (Firebird)
3 (—) Gyron (Firebird)
4 (—) Bruce Lee (US Gold)
5 (—) Raid over Moscow (US Gold)
6 (—) Finders Keepers (Mastertronic)
7 (—) Sorcery (Microsphere)
8 (—) Chiller (Mastertronic)
9 (—) Dorian (Mel. House)
10 (—) Formula 1 Simulator (Mastertronic)
(Compiled by Websters Software)

## BBC B

1 (—) Wanderers (Imagine)
2 (8) Football Manager (Addictive)
3 (5) Mini Office (Database Pub)
4 (8) Castle Quest (Micropower)
5 (1) Frak (Aardvark)
6 (7) Challenger (Mastertronic)
Duck (Firebird)
8 (—) Beach Strike (Firebird)
9 (8) Estra (Firebird)
10 (2) Acid Drops (Firebird)
(Compiled by Websters Software)

## Atari

1 (9) Blue Max (US Gold)
2 (7) Fort Apocalypse (US Gold)
3 (—) Spy Hunter (US Gold)
4 (6) Bruce Lee (US Gold)
5 (—) Drelbs (US Gold)
6 (8) Mr Do (Collins)
7 (—) Smash Hits Vol 3 (English Soft)
8 (—) Smash Hits Vol 5 (English Soft)
9 (1) Smash Hits Vol 1 (English Soft)
10 (2) F15/Strike Eagle (Centresoft)
(Compiled by Websters Software)

## C.16

1 (—) BMX Racers (Mastertronic)
2 (8) Vegas Jackpot (Melbourne House)
3 (3) Classic Adventure (Melbourne House)
4 (8) Flight Path 737 (Anirog)
5 (8) Scramble (Anirog)
6 (1) Wizard & the Princess (Melbourne House)
7 (10) Roller Kong (Melbourne House)
8 (—) Flight 015 (Craig Comms)
9 (9) Decks (CBS)
10 (4) Games Tape 1 (Melbourne House)
(Compiled by Websters Software)

## Amstrad

1 (—) Decathlon (Ocean)
2 (4) Sorcery (Virgin)
3 (2) Jet Set Willy (Software Projects)
4 (2) Fighter Pilot (Digital Integration)
5 (6) Flight Path 737 (Anirog)
6 (3) World Cup (Artic)
7 (10) Stock Market (Amsoft)
8 (—) Punchy (Amsoft)
9 (—) Forest at Worlds End (Interceptor)
10 (5) Hobbit (Melbourne House)
(Compiled by Websters Software)

## Diary

| Event | Dates | Venue | Admission | Organiser |
| --- | --- | --- | --- | --- |
| Apple 85 | May 9-10 10.00am-6.00pm May 11 10.00am-4.00pm | Novotel London W6 | Free in advance from organisers | Database Publications 061-456 838[illegible] |
| Electron & BBC Micro User Show | May 9-11 10.00am-6.00pm May 12 10.00am-4.00pm | New Horticultural Halls London SW1 | £3.00 adults £2.00 children | Database Publications 061-456 8383 |
| 8th Commodore Computer Show | June 7-8 10.00am - 6.00pm June 9 10.00am - 5.00pm | Novotel London W6 | £2.00 adults £1.00 children | D + CS Marketing Ltd 01-630 8108 |

# Readers' Chart No 23

| | | | |
| --- | --- | --- | --- |
| 1 | (2) | Soft Aid *(Spectrum/C64)* | **Various Artiste** |
| 2 | (1) | Alien 8 *(Spectrum)* | **Ultimate** |
| 3 | (4) | Everyone's a Wally *(Spectrum/C64)* | **Mikro-Gen** |
| 4 | (3) | Knight Lore *(Spectrum)* | **Ultimate** |
| 5 | (5) | Sorcery *(C64/Amstrad)* | **Virgin** |
| 6 | (–) | Match Day *(Spectrum)* | **Ocean** |
| 7 | (10) | Tir Na Nog *(Spectrum/C64)* | **Gargoyle** |
| 8 | (7) | Football Manager *(Spectrum/C64/BBC/Electron/Oric/Atmos/Dragon/Vic20/ZX81)* | **Addictive Games** |
| 9 | (6) | Ghostbusters *(Spectrum/C64)* | **Activision** |
| 10 | (8) | Impossible Mission *(C64)* | **CBS/Epyx** |

**Winning phrase No 23, "8 hot Italians kneel for Di" from Carol Sleight of The Avenue, Bentley, Doncaster, S Yorks, who receives £25. Others who came close were "Oil the old Ataris", from Philip Arkley, of Accrington in Lancs, and "Oh! 8 little ogres and a fink" from R Parker of Cirencester, Glocs**

# Now voting on week 25 – £25 to win

Each week *Popular* is compiling its own special software top ten chart – compiled by YOU,

And each week we will send £25 to the person who sends in, with their chart votes, the most original (witty, neat or clever – but never rude) phrase or sentence made up from the letters (you don't have to use them all) in the titles of the top three programs in this week's chart, published above

You can still vote in the chart without making up a slogan – but you won't be in with a chance of winning the prize.

All you have to do is fill in the form below (or copy it out if you don't want to damage your magazine) and send it off to. Top 10, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP

**Voting for Week 25 closes at 2pm on Wednesday May 15 1985. Entries received after that time will not be eligible for inclusion in that week's voting. The judges decision is final. Only one entry per individual per week will be allowed.**

**Name** ..............................
**Address** ..............................
..............................
..............................

**My top 3: Voting Week 25**
1..............................
2..............................
3..............................

**My phrase is:** ..............................

# New Releases

## ULTIMATUM

Alligata sometimes think that I pick on them, but it isn't true By and large, their products are better than the average and are reviewed accordingly But what on earth does anyone think the review of *Night World* is going to be – I mean, are they serious?

Try this plot for size – search for the golden fleece, watch out for the demon lord, and as the sun moves across the sky you change from human to gargoyle. The plot is obviously, a steal from *Knight Lore* and *Underwulde* This is made all the more absurd because Ultimate have just released the real *Knight Lore* for the BBC and this program looks even more pathetic as a result.

You move a little man through screens of such visual simplicity they look like a straight conversion from the ZX81. No humorous ropes, ladders and all that here – you get blocks and holes like unfinished Lego Every so often a tiny sprite – apparently a harpie, although it looks like a green trout – moves across the screen and drains your energy

The control responses are sluggish, the jump detection very inexact and the music is a rip-off of *Electricity* by Orchestral Manoeuvres in the Dark – anybody paying royalties? I think I'll leave it at that.

**Program** *Night World*
**Price** *£6.95*
**Micro** *BBC*
**Supplies** *Alligata Software*
*1 Orange Street*
*Sheffield S1 4DW*

## ONE COMMAND

Several companies have tried to teach machine code through a program package and the real worth of the end results have been doubtful. One series of packages which I think will help – even if it doesn't get you a job with Ultimate – is Dream Software's *Machine Code for Beginners* which is now available on several micros including the Electron, C16 and Plus/4

What you get is a package that lets you try out short machine code programs without risk of crashes – you can see what is happening, register by register and on the stacks, and thus begin to grasp the point and logic of all those numbers A well written booklet leads you through each new instruction and the use of stacks flag setting, indexing and the like

It's well judged in terms of pace of learning – one new command at a time, nothing too complicated to discourage you early on For example you may choose first of all to express all commands in binary rather than hex since those OA's and 7C's put a lot of people off.

**Program** *Machine Code for Beginners*
**Price** *£5.95*
**Micro** *Commodore etc*
**Supplier** *Dream Software*
*PO Box 64*
*Clifton*
*Bristol*
*BS8 3RG*

Pick of the week

## PLAY THE GAME

What happens when you mix the Amstrad with high resolution monitor and no attribute problems with Ultimate Play the Game? You get easily the best program the Amstrad has ever seen and a version of *Knight Lore* that is better than the original. In fact, if I were Amstrad I would be pleading with Ultimate to let me put the game out on the Amsoft label, even if it meant taking no cut at all for myself

*Knight Lore* on the Amstrad is *Knight Lore* on the Spectrum with better sound and more finely detailed, three coloured graphics The awesome, intricate graphics are even more awesome, the look of the game on screen is enough to make most software houses, certainly all the Amstrad ones, pack up and go home

To summarise the game, you must explore the rooms of the Knight Lore castle looking for the various mystic objects that will remove the curse that transforms you into a werewolf every time the sun sets – in the game this happens fairly frequently. The objects are protected by ghosts, guards and other things including various fiendish platforms which move and collapse without warning So far so *Manic Miner*-esque, but all the above happens in astounding 3D

You see each room as though from a vantage point high in one corner of the room. The objects are so cleverly designed that they 'feel' solid, playing the game is as close to playing a 'cartoon' as anyone has got If you have an Amstrad you should start whooping for joy.

**Program** *Knight Lore*
**Price** *£9.95*
**Micro** *Amstrad CPC 464*
**Supplier** *Ultimate*
*The Green*
*Ashby de la Zouch*
*Leicestershire*

# This Week

| Program | Type | Micro | Price | Supplier |
|---|---|---|---|---|
| Gatecrasher | Arc | Amstrad | £8.95 | Amsoft |
| Knight Lore | Arc | Amstrad | £9.95 | Ultimate |
| Roland in Space | Arc | Amstrad | £8.95 | Amsoft |
| Home Account Manager | Ut | Amstrad | £14.95 | Amsoft |
| Ivestat | Ut | Amstrad | £29.95 | Amsoft |
| Stock Aid | Ut | Amstrad | £29.95 | Amsoft |
| Hampstead | Ad | BBC | £9.95 | Melbourne House |
| Knight Lore | Arc | BBC | £9.95 | Ultimate |
| Bounty Bob Striker | Arc | Commodore 64 | £9.95 | US Gold |
| Operation Swordfish | Arc | Commodore 64 | £8.95 | British Software |
| Roland's Rat Race | Arc | Commodore 64 | £7.95 | Ocean |
| MCT Basic | Ut | Commodore 64 | £10.95 | MCT |
| Zork 1 | Ad | Einstein | £41.60 | Tatung |
| Fu-Kung in Vegas | Arc | Einstein | £9.95 | Tatung |
| Punchy | Arc | Einstein | £9.95 | Tatung |
| Space Trap | Arc | Einstein | £9.95 | Tatung |
| Alphabet Quest | Ed | Einstein | £14.95 | Tatung |

# New Releases

## AFTER 2049

Whenever a game is accused of being (by me usually) a mere *Manic Miner* clone people occasionally respond by saying ah but *Manic Miner* was a copy of *Miner 2049er*'

This is somewhat true. *Miner 2049er* was an Atari game that featured platforms, things to collect, strange organisms and the like. However (I think) *Manic Miner* was about a trillion times more inventive, witty and subtle – and had a lot more screens

BIG FIVE

The sequel to *Miner 2049er*, *Bounty Bob Strikes Back*, now available in this country on the Commodore through US Gold, is something I find extremely difficult to assess. Looked at in one light it is just more of the same old tired stuff, a little man, who jumps between platforms which turn a different colour as he walks over them, things to collect, monsters to squelch or by which to be squelched. There are a mere 25 screens, which is nothing these days, and whatever the blurb says the graphics aren't that great

On the other hand, it is well designed with an almost Matthew Smith level of care given to judging the screen layouts and providing odd objects to be mastered. These include lifts, acid rain, weirdos, suction tubes and other wonders. The game also has the most complicated high score table I've ever seen. On balance I'd say that if you really like *MM* style games this is one of the best for sheer fiendishness. If you're not convinced then this isn't going to change your mind

**Program** *Bounty Bob Strikes Back*
**Price** *£9 95*
**Micro** *Commodore 64*
**Supplies** *US Gold*
*Unit 10*
*The Parkway*
*Industrial Centre*
*Heneage Street*
*Birmingham B7*
*4LY*

## EXTENDED

*MCT Basic* for the Commodore 64 is not your usual extended Basic. Actually it is designed to give the Commodore 64 many of the same commands as those on the Plus 4 and C16. It's similar enough such that you can type in C16 programs from magazines and expect them to run.

Obviously the main areas of change are commands like *Draw* and *Box* which make all those clever graphics available from Basic. Other commands give the Basic more structured commands

*MCT Basic* also gives you a number of commands to access the Sid chip including *Env* for envelope, *Filter*, *Vol* – a considerable improvement over all those pokes. The package also includes a 'free' cassette that use the MCT Basic commands to provide a screen drawing program from joystick.

It's well done and really my only doubt is over the idea that there are lots of C16/+4 programs to be typed in from computer magazines. Actually there are very few around and no signs of the numbers picking up

**Program** *MCT Basic*
**Price** *£10 95*
**Micro** *Commodore 64*
**Supplier** *MCT*
*Group House*
*Fishers Lane*
*Norwich*
*Norfolk NR2 1ET*

## TINFISH

British Software (there's an unequivocal title) has released what it describes as a war game called *Operation Swordfish*. But arcade addicts shouldn't be put off, it requires few of the usual wargaming skills of judgement and tactics – you just need to shoot straight and stay out of danger.

In fact, *Operation Swordfish* is very like *Beach Head* – you blast away at various ships in the far distance, trying to avoid their fire and depth charges. There are also aircraft defending the convoy to be shot at

You can take your submarine to periscope depth and attack the convoy – the view changes to a periscope shape – but you must surface if you want to take on the aircraft. As the game progresses you have to be more careful as the depth charges get closer

BRITISH SOFTWARE PRESENTS
OPERATION SWORDFISH
WAR GAME

It's graphically well done, particularly the movement of the planes, and is entertaining to play, though blasting away will probably get a bit tedious eventually.

**Program** *Operation Swordfish*
**Price** *£9 95*
**Micro** *Commodore 64*
**Supplies** *British Software*
*85 Greenway*
*Chislehurst*
*Kent BR7 6DL*

## RAT TALES

More licensing deals. This time it's between Ocean and the force behind TV Am's Roland Rat. Together they bring us *Roland's Rat Race* and it's pretty nifty, good even

The idea is that Roland Rat has to get to TV Am by transmission time lest he be fired (and replaced by a skateboading duck or similar). Getting to work involves the usual massed sprites as Roland moves along pipes

# This Week

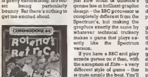
| | | | | |
|---|---|---|---|---|
| **Boardello** | S | Einstein | £12.95 | Bubble Bus |
| **Classic Adventure** | Ad | MSX | £5 95 | Melbourne House |
| **Tasword MSX** | Ut | MSX | £13 95 | Tasman |
| **Shadowfire** | Ad | Spectrum | £9.95 | Beyond |
| **Pete n Barry** | Arc | Spectrum | £4.95 | Impact |
| **Go** | S | Spectrum | £8.95 | Shodan |
| **Grand National** | S | Spectrum | £8.95 | Elite |
| **Maverick** | S | Spectrum | £5 95 | CCS |
| **Microdrive Ld/save** | Ut | Spectrum | £5 00 | Stratosoft |
| **XBasic** | Ut | Spectrum | £9 99 | Stratosoft |

Key: **Ad** – adventure, **Arc** – arcade, **Ed** – education, **S** – strategy-simulation, **Ut** – Utility

and down tunnels collecting food for energy and dodging roving Wellington boots and worms

Roland is armed with a glue gun to stop baddies in their tracks and can get a lift on an occasional train that passes. If you grab the right bits to make a key Roland can also release friends Kevin and Errol who have apparently been kidnapped.

The graphics are pretty stylish – almost a touch of the Tony Crowthers in the background detail – and the game is pretty entertaining the music being particularly bouncy. But there's nothing to get too excited about.






**Program** *Roland's Rat Race*
**Price** *£7.95*
**Micro** *Commodore 64*
**Supplier** *Ocean*
*6 Central Street*
*Manchester*
*M2 5NS*

## BEEB LORE

Overwhelming evidence that it ain't what you program, it's the way that you program it, with the release of *Knight Lore* for the BBC B.

Most previous BBC games had graphics that looked like inferior Commodore sprites. But the BBC *Knight Lore* looks exactly the same as the Spectrum version, retaining the two colour limit, unlike the Amstrad version.

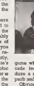
This is interesting. Where the Spectrum was limited to two colours to prevent the colours clashing, presumably with the BBC it's a case of memory limitations when you use the hi res the game requires. It also reveals, tacitly, just how much of Ultimate's genius lies in brilliant graphic design – the BBC processor is completely different from the Spectrum's, but making the graphics exactly the same by whatever technical trickery makes a game that plays exactly like the Spectrum version.

If you have a BBC and play arcade games on it then, with the exception of *Elite* – a very different style of game – this is quite simply the best. You'll love it.

**Program** *Knight Lore*
**Price** *£9.95*
**Micro** *BBC B*
**Supplier** *Ultimate*
*Ashby Computers*
*and Graphics*
*The Green*
*Ashby de la Zouch*
*Leicestershire*
*LE6 5JU*

## BORN TO WIN

There are plenty of horse racing programs around from statistical betting aids to straight races with square blocks for horses. However, Elite's *Grand National* is something special – a racing




game which uses all the arcade technicalities to produce a game that looks superb and plays wonderfully.

Obviously the gist of the game is to choose horses to bet on by studying form and then to actually ride a horse in the Grand National. It's the actual ride that makes the game. The centre screen shows a helicopter view of the action as your horse (maybe) moves up the field and passes the competition. Another screen gives a lateral view to help you judge when to jump at each fence and shows a beautifully animated horse. All the fiendish fences are here and falling just as you race into the lead reveals expletives previously unheard of.

Even if the idea of a racing game fills you, quite understandably, with boredom, take a look at *Grand National* and have your mind changed.

**Program** *Grand National*
**Price** *£6.95*
**Micro** *Spectrum*
**Supplier** *Elite*
*Anchor House*
*Anchor Road*
*Aldridge*
*Walsall WS9 8PW*

## GO CRAZY

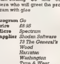
There have been a few versions around of *Go* for micros, most notably the prize winning version for the BBC (later converted to the Commodore 64). Now Spectrum owners can join the Chinese strategy game bandwagon with *Go* from Shodan Software.

It uses a mixture of Basic and machine code to give you a version of the game that plays all the authentic rules, accept various handicap levels including Komi – a special advantage which white may be given for moving second.

It plays well, although my play is no great challenge, and is generally functional. There are no spectacular graphics and the programming is adequate rather than superb. There were at least two bugs on the version I received, for one thing a Stop statement had been left in which prevented the game from working. When removed, everything was fine.

*Quit* is also not listed in the Options list that comes up on screen, although it is available.

I think that given the above, the retail price of £8.95 is too much although obviously there are quite a few Spectrum-owning *Go* fans out there who will greet the program with glee.



**Program** *Go*
**Price** *£8.95*
**Micro** *Spectrum*
**Supplier** *Shodan Software*
*73 The General's*
*Wood*
*Harraton*
*Washington*
*Tyne & Wear*

# This Week

**Amsoft** Brentwood House, 169 Kings Road, Brentwood, Essex 0277 230222 **Beyond** Lector Court, 153 Farringdon Road, London EC1R 3AD 01-837 2899 **British Software** 85 Greenway, Chislehurst, Kent BR7 6DL **Bubble Bus** 87 High Street, Tonbridge, Kent TN9 1RX 0732 355962 **CCS** 14 Langton Way, London SE3 7TL **Elite** 55 Bradford Street, Walsall WS1 3QD 0922 611215 **Impact**, 2 New Street, Cullompton, Devon EX15 1HA 0884 38312 **MCT** Group House, Fishers Lane, Norwich, Norfolk NR2 1ET **Melbourne House** 39 Milton Trading Estate, Abingdon, Oxon OX14 4TD 0235 835001 **Ocean** 6 Central Street, Manchester M2 5NS 061 832 6633 **Shodan** 73 The General's Wood, Harrowton Washington, Tyne and Wear **Stratosoft** 24 Willowtree Ave, Gilesgate Moor, Durham **Tasman**, Springfield House, Hyde Terrace, Leeds LS2 9LN 0532 438301 **Tatung** Stafford Park 10 Telford, Shropshire TF3 3AB 0952 613111 **US Gold** Unit 10, The Parkway Ind Centre, Heneage Street, Birmingham B7 4LY **Ultimate** Ultimate Play the Game, Ashby de la Zouch, Leicester LE6 5JV 0530 411485



## On the margin

Here's an interesting fact – if an independent computer retailer needs a BBC, or a Commodore 16, 64 or Plus 4 he can buy it cheaper from Boots than his wholesaler For Boots you can also read Currys, Dixons, Rumbelows and most other multiples. When this situation arose just after Christmas, we dealers were told that it was because the multiples had grossly overstocked, anticipating a Christmas bonanza which didn't come, and so were busy turning hardware back into cash, albeit at minimal profit.

The situation was complicated by Acorn's troubles which made many retailers nervous of holding large stocks of BBCs and anxious to get rid of those they already had Dealers holding Electrons were badly hit by the slashed price and were forced to sell at a loss The Spectrum was dropped and the price of the Spectrum Plus was axed without warning, except for the fortunate when heard over the 'grapevine'. Commodore fell from grace with the multiples by making the Plus 4 cheaper than the 64, the Plus 4 can now be bought for an amazing £130

The strange thing about these price cuts, particularly those generated by the shops themselves, is that they have persisted until now, almost five months since the alleged overstocking The multiples must either be losing a lot of money on each computer or obtaining their supplies very cheaply

On the face of it, all this is very good news for the customer and I hardly expect you to shed crocodile tears for the retailers Before Christmas £300 for a Plus 4, now less than half that. Then £179 for a Spectrum Plus, now £119 if you know where to look the problem is that the independent retailers are already starting to go broke, taking some of the wholesalers with them

Quite soon the expert advice available from good independents will be hard to find – the customer will have to rely on the pimply youth in Boots.

The multiples will find themselves with even more power and will be able to dictate terms yet more clearly to the manufacturers They will have the ability to make and break the micro suppliers The trend will be towards more conservative models which are proven good sellers, the bright new ideas which have taken micros so far so quickly will not be risked.

Computers will become another routine consumer item, ranged on the shelves alongside washing machines and toasters, selling on brand name and marketing muscle with technical details relegated to a small appendix in the back of the 'instructions'. The idea of the owner being able to program it will be foreign, extra programs will be bought like attachments to a food mixer

The thousands of small companies producing software and hardware accessories, run by enthusiasts and selling largely to enthusiasts, will feel the ground subside beneath them.

So the future for the lorry driver and his family – Alan Sugar's perceived market – looks rosy The hobbyist – more Sir Clive's area – who is perhaps keener on state-of-the-art technology than having his connecting problems solved for him must look to the future with misgivings

**James Lucy**



## Clocking in

**Puzzle No 157**

Down at the 'Dog & Puddle' the patrons play an interesting game of darts It is similar to 'Round the Clock' except for a number of details. The rules are as follows

i) A dart is thrown, and the score noted. This is known as the 'starting' score

ii) The player must then aim to hit the adjacent sector of the board progressing in an *anti-clockwise* direction

iii) This score is then added to the starting score to obtain the running total.

iv) The player then continues around the board in an anticlockwise direction until all segments of the board have been hit in turn.

v) If at any time the total score is an exact multiple of the 'starting' score the player forfeits the game

Understandably, this last rule has proved the downfall of many players If you were playing where would you aim your first dart?

(Note that doubles and trebles are only counted as the single score, and the bull and outer are not involved in this game)

**Solution to Puzzle 152**

There are three solutions

log 484 = 2.68484536, log 597 = 2.77597433, and log 954 = 2.97954837

```
10 FOR N=100 TO 999
20 L=LOG(N):L=L/2.302585092994046
30 L$=STR$(L)
40 IF VAL(MID$(L$,5,3))=N THEN PRINT N,L
50 NEXT N
```

The solution is found by placing the value of the common log into a string *L$*, and checking to see if the third to fifth decimal places are the same as the original number

The catch is that most micros only compute *the natural* logarithm of a number and not the common log Consequently it is necessary to convert from the one type to the other This is readily done by dividing the natural logarithm by the mathematical constant, *M*. This is the modulus of common logarithms and is equal to 2.302585092994046

**Winner of Puzzle 157**

The winner of Puzzle No 152 is J K Martin of Hackney, London E8, who receives £10

**Rules**

The closing date for Puzzle 187 is June 5

## The Hackers

I don't like its green display.
THE BIT PIT COMPUTERS SOFTWARE
Don't worry, it'll turn red in a week or two.
GASP
WHAT!?
Oh yes... it's an Apple...
?

# Meet the Gang!




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